South African Medical Journal
Suid-Afrikaanse Tydskrif vir Geneeskunde
P.O. Box 643, Cape Town — Posbus 643, Kaapstad

Cape Town, 30 August 1958 Weekly 2s. 6d. | Vol. 32 No. 35 Deel 32 | Kaapstad, 30 Augustus 1958 Weekliks 2s. 6d.

IS THE LIVER AN INACCESSIBLE ORGAN?*

D. SCHALM, M.D., *Internist* and H. R. BAX, M.D., *Surgeon*
From the Arnhem Municipal Hospital, the Netherlands

The liver consists of 2 lobes, separated by the ligamentum falciforme. The right lobe is larger than the left, as it contains 2 additional parts: the quadrate lobe on the anterior side and the caudate lobe on the posterior side. All these hepatic lobes are characterized by an unusually abundant system of tubular structures. Not only are there arteries and veins but, in addition, the liver contains portal vessels which supply nutrients *from* the intestine and bile ducts which remove the bile *to* the intestine.

What is the role played by the hepatic cells in these tubular structures? It was once believed that the liver was composed of small clusters of hepatic cells: the lobules. The periphery of each of these lobules was believed to be enveloped in a reticulum of biliary capillaries, portal and arterial rami, while the centre contained a small vein. This point of view has changed, and it is now assumed that the liver has a diffuse structure. The organ consists of plates of hepatic tissue, each of which has a thickness of one cell. These plates are traversed by two tubular systems: the portal rami, arteries and bile ducts on the one hand, and the venous system on the other. Both systems are perpendicular to each other. The ultimate offshoots are woven round the hepatic cells, and they discharge their products—or receive them—via the space between the plates, the so-called vacuoles or sinuses.

The liver can be compared with a large building with innumerable rooms and cubicles, all of which are interconnected by windows and doors. Like the gas, water and electricity pipelines in a house, the tubes of the various hepatic systems are distributed from room to room, and from wall to wall. It is a good thing to involve these triumphs of modern technique in our comparison. They are based on physical or chemical formulae of human design. In the liver, too, the direction of flow in the tubular system—that is towards and away from the hepatic cells—is probably determined by such factors as pressure and tension. The liver can thus be regarded as an organ, which is governed, among other things, by the laws of hydrodynamics. This means that the organ can also be compared with a large system of irrigation in which 4 different types of fluid are involved, either to irrigate or to drain; a system which can only be maintained if the irrigating and draining canals can cope with their area by smoothly functioning pumping-stations, and if the correct pressure can be ensured by means of locks and sluices. This comparison, too, is a useful one. The heart can be regarded as a suction-station, and the digestive tract as a pumping-station. A conspicuous sluice is found in the papilla of Vater. All these comparisons make it clear that the minutely adjusted mechanism of the liver *must* be upset in the presence of, say, insufficiency of the right cardiac ventricle, which causes retardation of the flow in the hepatic veins. The comparisons also clearly show how much the liver must be disturbed when an extrahepatic cause impairs the flow in the portal system (extrahepatic portal hypertension) or when—for whatever reason—the removal of bile towards the intestine is impeded. Invariably the hepatic cells are forced to function under abnormal conditions.

* An address delivered at a special meeting of the Cape Western Branch of the Medical Association of South Africa, Cape Town, 11 April 1958.

CHANGES WITHIN THE LIVER

All this refers to pathological conditions of extrahepatic origin. It is equally obvious, however, that pathological changes within the liver must interfere with satisfactory function. We are referring to inflammations of the hepatic tissue (hepatitis) or of the small biliary capillaries (cholangitis). In such cases oedema and cellular infiltrates will constitute dams which threaten to upset the equilibrium of the system of irrigation. Reactions are inevitable—in an attempt at correction on the one hand and to be regarded as irreparable loss of cells on the other.

This also holds true for a hepatic affection not hitherto mentioned: the notorious cirrhosis. This disease is characterized, among other things, by progressive proliferation of connective tissue. This connective tissue will soon disturb the capillary flow and, gradually, asphyxiate the hepatic cells themselves. Both mechanisms are clearly defined in the clinical course. For it is cirrhosis of the liver which provides so pertinent an example of the interrelationship between intrahepatic and extrahepatic pressure. Among all the causes of portal hypertension, the intrahepatic aetiology based on cirrhosis of the liver is most frequently encountered. We know that such a liver, after a more or less prolonged period of insufficiency, becomes completely decomposed and leads

to a fatal issue. A survey of this series—venous or biliary congestion of the liver, hepatitis, cholangitis, extrahepatic or intrahepatic portal hypertension—immediately shows that they are pathological conditions which can be therapeutically influenced.

It is possible to improve the condition of the liver by stimulating the poorly functioning heart or by controlling the disturbance in the drainage of bile (obstruction by concretion or stricture). Today it is certainly possible to control the inflammation of the bile ducts with the aid of antibiotics. Moreover, the hepatic cells that tend to become insufficient, can be assisted—even in a disease such as cirrhosis—by supplying the constituents which the affected liver cell requires. Liver extract, certain liver diets and transfusion of albumins are useful in this respect.

THE ACCESSIBILITY OF THE LIVER

It is not primarily this pathology of the liver, therefore, which we have in mind when we express doubt about the inaccessibility of the liver. There is also an entirely different pathology and, in fact, in this respect there is nothing to distinguish the liver from other organs. When enumerating these pathological conditions, therefore, it is better to adhere to the normal classification. In the liver, too, distinction is made between congenital and acquired anomalies, and the latter can be divided into inflammations and neoplasms. The inflammations are either acute or chronic, and either specific or aspecific. The neoplasms are either malignant or benign, either of primary hepatic origin or of a secondary, metastatic nature. Thus the list of diffuse affections can be supplemented with a list of a number of more circumscribed anomalies: abscess of the liver, hepatic cysts, haemangiocavernoma, teratoma, the so-called hepatoma, hepatic concretions, primary carcinoma of the liver and, especially, invasion of the liver by a carcinoma of the gall-bladder or the stomach. It is these conditions which have so far emphasized the inaccessibility of the liver.

In the past, liver abscesses were drained, and liver cysts scooped out. It will be observed, however, that the operating surgeon in such cases attempted with special care to confine his work to the affected tissue, leaving the hepatic tissue itself untouched as much as possible. In the past few years case reports have been published on wedge resections, or even partial hepatectomies, performed with the object of attaining a radical cure of a cancer of one of the adjacent organs. These operations, however, were exceptions, and the impression is gained that the operating surgeon was surprised by the fact that the patient survived them. And why this surprise? Man has but one liver. Total extirpation, therefore, was not feasible. Partial resection, however, also seemed unjustifiable. The liver is a very large organ indeed, but should not this volume be regarded as necessary for the multitude of important demands made on it? In view of the fact that the liver is the largest of all organs, in animals as well as in man, it is obvious that Nature must have had its reasons for providing such a large liver. If this is so, can artificial reduction of this volume then be justified? Yet another aspect has to be considered: however insufficient our understanding of the hepatic structure may have been, our preceptors were only too well aware of the ease with which surgical intervention in this highly vascular organ could give rise to a fatal haemorrhage, and they knew how readily an incision into the bile ducts could cause a fatal infection. They had had experience with these complications in cases in which it was the fighter's knife rather than the surgeon's lancet that injured the liver, or in which a lesion of the hepatic tissue resulted from contact with a waggon-wheel or other obtuse objects. Briefly, operations on the liver were considered a feat, the performance of which was not, or hardly, permissible for two reasons: no part of the human liver is dispensable and the intervention itself is too hazardous.

THE INDISPENSABILITY OF LIVER TISSUE

A few years ago, at one of the staff meetings in our hospital, a liver was demonstrated which was nearly completely filled by large carcinomatous nodes which had not been clinically noticeable. The question arose how this absence of symptoms could have been possible in view of the fact that so much tissue was functionally impaired. Animals were known to have overcome extirpation of large portions of the liver without any ill effects. It had to be admitted, however, that it is very difficult to demonstrate signs of disfunction or to estimate the functional capacity of the remaining part of the liver in animals. Even such a simple indication as jaundice is only established with difficulty in hairy test animals.

We ourselves had previously elaborated an exact method of determining the total quantity *and* the type of bilirubin in the blood. It was therefore decided to use this method in an attempt to establish the effects of inhibition of the function of bilirubin excretion in large parts of the liver.

This could have been done by resecting parts of the liver. It seemed technically simpler, however, merely to obstruct the bile drainage. The experimental animal selected was the rabbit, as this involved a minimal expense. Our choice proved to be a fortunate one, for the liver in these animals could be divided into a large, trilobate main liver and a small so-called accessory liver. Both had their own hepatic duct, and the rabbit was therefore extremely well suited to our experiments. By ligating the hepatic duct of the main liver we were able to deprive 75% of the hepatic tissue of its bile drainage. Not only did the rabbits tolerate this intervention but chemically they showed no trace of jaundice. This experiment demonstrated that rabbits have been endowed by nature with a liver which might well have been considerably smaller. In other words, the cells of the rabbit liver possess a reserve power so considerable that a relatively small number of these cells are capable of counter-balancing the loss of a great many other cells. This, then, was the *reserve capacity* of the liver.

REGENERATION OF LIVER TISSUE

Our experiments meanwhile yielded a second—and unexpected—result, which could be attributed to the fact that we had preferred ligation of bile ducts to resection of parts of the liver. Not only was the obstructed part of the liver found to become atrophic but, at the same time, the unobstructed part was found to start growing—to such an extent that at the end of our experiments—regardless of whether it was after a month or a year—the total hepatic weight was found to have remained the same. This observation proved that the liver has regenerative powers, and also that these powers had been released by this technique.

We were fascinated by this reserve capacity and regenerative power, and attempted to establish whether both could be regarded as intrinsic properties of the hepatic cell. For this purpose we performed our experiments on animals previously starved. The liver showed a splendid response, with un-

mistakable reserve capacity and regenerative power. In addition we were able to demonstrate the same properties when the liver was not deprived of its bile drainage but injured in some other way. Reserve capacity and regenerative power could both be released by ligating a branch of the portal vein.

These experiments seemed to warrant the following conclusions:

1. The liver possesses a considerable reserve capacity.
2. The liver is capable of regeneration under various conditions.
3. This regeneration becomes manifest as soon as one part of the liver is placed under relatively more favourable conditions than the other part.

In advancing these hypotheses we had to bear in mind that they were tenable exclusively for our experimental animal, the rabbit. We therefore repeated the experiments with an animal which seemed to us to be somewhat closer to man, viz. the pig. The result was identical; reserve capacity and regenerative power were again demonstrable.

It now remained to be established whether the human liver, too, possessed these properties. From our own material and from the literature, we collected a number of observations which afforded conclusive proof of the existence of such properties. Invariably these cases involved patients who did not complain of hepatic symptoms, or did so only immediately before death, but in whom this organ—as a result of obstruction of a bile duct or a portal branch—showed unmistakable atrophy of a lobe, associated with striking hypertrophy of the unobstructed part of the liver. In all these patients Nature performed the experiments we had made in our rabbits with identical results. The regenerative power could be read at a glance from the illustrations accompanying the reports; and in the patients good condition during life showed that, during the period preceding the hypertrophy, there had been a sufficient reserve capacity.

In the course of a study of the literature we found a report on a meeting of the anatomical Society of Great Britain and Ireland, which contained a very important communication. This concerned the liver of an otherwise completely healthy Chinese who committed suicide by hanging himself in a Hong Kong prison. This man's medical history included an abscess on the right side of the liver during childhood. The abscess had caused complete destruction of the right lobe but was subsequently healed by perforation via the pleural cavity. The speaker described an atrophy of the right lobe but also recognized the left-sided hypertrophy. He concluded his address as follows:

'It is theoretically possible to tie the vessels of one side at the gate of the liver, leaving the other side to do the work. That one-half of the liver can hypertrophy, so as to perform the function of the whole, is attested by pathological study. I commend this subject to all those who are working at the surgery of the liver, and I believe that if, in the hands of future observers, the statements I have made receive closer investigation, the surgery of the liver will be advanced a step.'

That was in 1899! The name of this investigator (Cantlie) should be mentioned here to his honour. And we ourselves—some 60 years later—can observe that it is indeed justifiable to reduce the volume of the human liver by surgical means whenever this can be expected to contribute towards controlling pathological conditions. The only question which remains is whether the risk entailed by such an operation should prevent us from performing it.

THE PRACTICABILITY OF SURGERY OF THE LIVER

We find ourselves in a period when it is 'fashionable' to inject all hollow organs with some contrast medium, after which a possible anomaly can be demonstrated with the aid of X-rays. Thus, we are familiar with X-ray examination of ventricles, joints, bronchi, the urinary system, the digestive tract, heart, large vessels, etc. Some 10 years ago the large bile-ducts were added to this series. Operative cholangiography provides us with important data on the contents of the bile-ducts. The method has been advocated especially by investigators in Sweden. It was in this country, too, that attention was drawn to a feature which was revealed partly by cholangiography. This method makes it possible to visualize not only the common duct and the 2 hepatic ducts, but also the network of intrahepatic remifications. It was found that the bile-ducts in the liver are distributed in such a way that the organ can be considered composed of 2 parts. This recalled the 2 lobes of the anatomists. However, the lobes which were defined cholangiographically showed no correspondence whatever with the anatomically described lobes. The left half extended much farther to the right, and included both the caudate and the quadrate lobe. In fact the division between right and left was localized in a plane traversing the gall-bladder and the vena cava.

The exact position of this plane was subsequently determined by injecting the 4 tubular systems of the liver, separately or combined, with an indurating plastic substance, after which the liver parenchyma could be removed by maceration. It was found that the bile ducts are invariably accompanied by portal and arterial branches (as assumed by Glisson as early as 1654), and that each of the 3 has a typical, constant course. This course enables us not only to make a division into two lobes but even into a number of segments. The hepatic veins, on the other hand, show a completely independent but equally typical course. Recalling the fact, established in comparative anatomy, that the majority of mammals have a liver composed of several lobes it is clear that the human liver, too, can have a multiple anlage, the the fully grown organ being a result of fusion. This means that the human liver contains at least one plane—but in fact several planes—in which it is possible to make incisions without causing leakage of blood or bile. It is this fact which constitutes the basis of hemihepatectomy—an intervention first devised by French surgeons. A thoraco-abdominal incision is made, so that the liver can be mobilized towards the thoracic cavity after severance of the diaphragm. The suitable branches of the hepatic artery, portal vein and common bile duct are then ligated at the hilus. Theoretically, this should be followed by ligation of the hepatic vein on the posterior side of the liver. This vein, however, is often too short and sometimes runs an entirely intrahepatic course. It is for this reason that the liver is first divided, while this blood vessel is left alone until the very last.

Recalling the 2 lists of hepatic affections, and the fact that the more diffuse affections can be controlled by more general measures with an extrahepatic site of action, it now becomes evident that it is also possible to control localized intrahepatic anomalies. By means of hemihepatectomy we can remove ruptured or inflamed parts of the liver, hepatic

concretions, cysts and benign tumours. And perhaps we can even use this technique in operations for malignant tumours.

CIRRHOSIS

One disease has remained undiscussed so far. I refer to cirrhosis of the liver. It has been pointed out that it is possible to keep patients suffering from cirrhosis in relatively good condition for some considerable time by medication and especially by dietetic measures. Essential cirrhosis of the liver, at least as we know it in the Netherlands, is a progressive and intractable process. We have therefore considered whether the reserve capacity and especially the regenerative power of the liver can be utilized in these cases too. A study of the anatomical substratum of cirrhosis of the liver shows that there is an excess of connective tissue which threatens to supersede the hepatic tissue. The sequelae are bound to be the more serious the more severely the parenchyma is suppressed. Would it be possible, then, to assist the hepatic cells in the fight against this proliferating connective tissue? Would it be possible to stimulate the regenerative power of the still unaffected hepatic cells? This question, too was approached on the basis of an experimental investigation.

The test arrangement chosen was obvious. We had to determine whether the cirrhotic liver, too, might possess a reserve capacity sufficient to tolerate ligation of a hepatic duct or portal vein. And above all we had to determine whether this artifice would stimulate even a cirrhotic liver to hypertrophy. Cirrhosis of the liver was produced in our rabbits by injecting carbon tetrachloride. A number of animals died as a result of the injection. Those that survived were subsequently submitted to ligation of the hepatic duct of the main liver.

Again a number of animals died but the mortality was not higher than that due to the carbon tetrachloride itself. This proved that the reserve capacity of the livers rendered cirrhotic was not inferior to that of the normal rabbit liver. The next point was the hypertrophy. Autopsy on our animals after 3-6 months revealed that the unaffected accessory liver had hypertrophied in an entirely analogous way. The worst thing which could be said was that the rate of regeneration was somewhat slower. And a particularly encouraging fact was that the hypertrophied lobe showed considerably more favourable microscopic features that did the initial cirrhosis.

Could this encouraging observation also apply to human cirrhosis? In such a case the carbon tetrachloride cirrhosis of our rabbits will have to be considered similar to that of human cirrhosis of the liver. This seemed rather dangerous. Cirrhosis caused by carbon tetrachloride is the result of a chemical intoxication, and this cirrhosis is known to be immediately arrested when administration of the noxious agent is discontinued. One of the most characteristic features of human cirrhosis, however, is its progressive nature. On the other hand, the clinical picture of this cirrhosis has taught us that jaundice does not generally occur until the terminal stage is reached. This means that relatively few cells suffice to ensure hepatic function—at least as far as bile production is concerned. The question is whether this should be considered an indication of reserve capacity?

Furthermore, the histological features are of importance. Every pathological anatomist knows that cirrhotic specimens, apart from diffuse proliferation of connective tissue and cellular atrophy, show parts in which the hepatic cells are not only apparently completely normal but sometimes even appear to be newly formed. Can this not be regarded as an expression of the regenerative power which is required so urgently?

It seemed to us that we could rely on the human cirrhotic liver to behave like the rabbit liver. In principle, therefore, we decided to make an attempt to exert a favourable influence on human cirrhosis of the liver by ligating a hepatic duct in a suitable case. A suitable case! This meant that we were to employ this technique on a patient in whose case it was firmly established that no other type of therapy could succeed for any considerable period of time. Such a suitable patient was found in 1954 in a man of 73, who was suffering from a very severe form of cirrhosis. More than 3 years ago this man underwent a ligation of the right hepatic duct. His clinical tolerance to the intervention was good and this fact—combined with the laboratory data obtained during the first post-operative period—showed that we had rightly relied on the reserve capacity.

In the course of subsequent months the patient's condition gradually improved and, to our great satisfaction, he developed a swelling in the left upper abdominal region which could only be interpreted as a new liver.

CONCLUSIONS

In view of this development we decided to communicate our method to a small circle of colleagues. As a result, there are now 4 successful surgical cases of this type in our country. This is a very small number. We should also mention that 5 other cirrhotic patients had this operation—performed by ourselves or by other surgeons—in the course of this same period. They all died. In no case, however, could the death be ascribed to insufficient reserve capacity or to failure to regenerate. The fate of these patients merely showed that there are still many pitfalls in the field of determination of indications and that of the technical performance.

We consider that the useful effect of this method—if indications are determined with accuracy—has been proved. Further experiences will have to show the exact value at which this therapy should be estimated.

MALARIA CONTROL IN THE NORTHERN TRANSVAAL

The following list of references was inadvertently omitted from Dr. C. J. H. Brink's article under this title when it was published in the issue of this *Journal* of 9 August 1958 (**32**, 800).

REFERENCES

1. Russell, P. F. (1956): Amer. J. Trop. Med. Hyg., **5**, 937.
2. Candau, M. G., Off. Rec. Wld. Hlth Org., no. 57.
3. Wld. Hlth Org. Techn. Rep Ser. (1956): No. 103.
4. Vincke, I. H. (1956): 7th A.R., Inst. for Scientific Research in Central Africa. *Malaria Control South of the Sahara*, p. 69. Brussels.
5. Weitz, B. (1956): Bull. Wld. Hlth. Org., **15**, 473.
6. Davidson, G. (1955): Trans. Roy. Soc. Trop. Med. Hyg., **49**, 339.
7. Lacan, A. (1952): Mém. Inst. Sci. Madagascar, Ser. E 1953, **4**, 503.
8. Halcrow, J. G. (1956): Nature, **177**, 1103.
9. Hamon, J. (1953): Mém. Inst. Sci. Madagascar. Ser. E 1953, **4**, 521.
10. Busvine, J. R. (1956): Bull. Wld. Hlth. Org., **15**, 389.
11. Eichler, W. (1956): *Malaria Bekampfung durch Streuflugzeuge*. Jena: Gustav Fischer Verlag.
12. Davies, C. S. (1956): Cent. Afr. J. Med., **2**, 364.
13. Merle, F. (1955): Bull. Soc. Path. exot., **48**, 691.
14. Fakir, M. T. (1957): Bull. Endem. Dis., Baghdad, **2**. 15.

South African Medical Journal : Suid-Afrikaanse Tydskrif vir Geneeskunde

EDITORIAL : VAN DIE REDAKSIE

METABOLIC INSUFFICIENCY

Measurement of the basal metabolic rate can lead one into all kinds of difficulties unless one is really *au fait* with its potentialities, its drawbacks and its interpretation. To start with, no semblance of accuracy can be expected unless the estimation is undertaken in strictly controlled conditions—with an experienced operator, upon a calm patient, in quiet surroundings. As regards interpretation, it is usually forgotten that the original careful investigators[1,2] found that about 1-5% of normal euthyroid individuals had BMRs below −15%.

A recent vogue for the use of tri-iodothyronine in so-called 'metabolic insufficiency' characterized by a low BMR has spread through the United States. Vigorous advertising by certain drug manufacturers has, on top of the spate of scientific papers of very doubtful validity, fanned this unnatural flame. Kurland, Hamolsky and Freedburg[3,4] started it, when they reported on 4 men with low metabolic rates, who complained of lethargy, easy fatigue, nervousness, emotional instability, irritability, sensitivity to cold, headaches, ill-defined aches and pains, and reduced sexual potency. These symptoms did not respond to treatment with desiccated thyroid, nor to l-thyroxin in usual dosage. The patients were believed to have normal thyroid function, because the uptake of radio-active iodine, the serum protein-bound iodine, and the serum cholesterol were all normal. 3:5,3′l-tri-iodothyronine administered alone in moderate doses, or combined with l-thyroxin, in small doses, produced a rapid elevation in BMR and relief of symptoms.

Tittle[5] reported similar cases with basal metabolic rates between −28 and −36%. Six of these responded better to tri-iodothyronine than to l-thyroxin, but 2 did better with l-thyroxin. Fields[6] reported on 40 children with 'metabolic insufficiency', but his criteria for diagnosis will not withstand careful scrutiny. Morton[7] apparently had no difficulty in finding 51 patients and in alleviating the symptoms of 46 with tri-iodothyronine. Since these symptoms were mainly those of chronic fatigue, irritability, depression, mental apathy, muscular aching, and the like, a trial with placebos or a double-blind study would at least appear to be necessary before widespread assertions are made. No such study has yet been reported, although some are being made in the United States. So far it is understood that they have found no substantiating evidence that such a condition exists—that is, a condition of hypometabolism which will respond to tri-iodothyronine but not to thyroxin.

Turning from the practical to the theoretical aspects of this strange condition, how is it to be explained? Kurland and his associates believe that patients with 'metabolic insufficiency' have peripheral insensitivity to thyroxin. The thyroxin does not become converted into its active form, or possibly the presence of tri-iodothyronine is necessary for the metabolism of thyroxin. This certainly sounds plausible, in view of the suggestion of Gross and Pitt-Rivers[8] that tri-iodothyronine may be the peripherally active form of thyroid hormone.

There is no direct evidence that a condition of tissue hypometabolism due to a defect in production of tri-iodothyronine exists. Kurland[9] found a slower disappearance of ^{131}I-labelled thyroxin from the blood of hypometabolic patients than from the blood of normal individuals. However, it is known that in conditions associated with a low metabolic rate a retardation of disappearance of thyroxin may occur and, further, that non-thyroidal material such as serum albumen may also disappear more slowly from the plasma of patients whose BMR is low. Kurland's findings, therefore, cannot be considered as good supportive evidence for the existence of his specific hypometabolic state.

It is to be hoped that no large acceptance of this syndrome will take place in this country. Quite apart from the likelihood that patients might not receive correct treatment for their complaints, the injudicious use of tri-iodothyronine is not without risk to the patient or to his pocket.

1. Boothby, W. M. and Sandiford, I. (1922): J. Biol. Chem., **54**, 783.
2. Means, J. H. and Burgess, H. W. (1922): Arch. Intern. Med., **30**, 507.
3. Freedburg, A. S., Kurland, G. S. and Hamolsky, M. W. (1955): New Engl. J. Med., **253**, 57.
4. Kurland, G. S., Hamolsky, M. W. and Freedburg, A. S. (1955): J. Clin. Endocr., **15**, 1354.
5. Tittle, C. R. (1956): J. Amer. Med. Assoc., **162**, 271.
6. Fields, E. M. (1957): *Ibid.*, **163**, 817.
7. Morton, J. H (1957): *Ibid.*, **165**, 124.
8. Gross, J. and Pitt-Rivers, R. (1952): Lancet, **1**, 593.
9. Kurland, G. S., Bustos, J. G., Hamolsky, M. W. and Freedburg, A. S. (1957): J. Clin. Endocr., **17**, 1365.

UROLOGIESE KLAGTES BY VROUENS

Indien ons die gemiddelde algemene praktisyn sou vra wat een van die mees algemene klagtes is waarmee sy vroulike pasiënte by hom om raad en hulp kom aanklop, sal die mening sekerlik uitgespreek word dat hy heel dikwels pasiënte kry wat oor ‚blaasmoeilikheid' kom raad soek. In baie van die gevalle is die sogenaamde blaasmoeilikheid in werklikheid ginekologies van aard en dikwels is die praktisyn self heeltemal in staat om die regte behandeling voor te skrywe. Waar daar egter 'n ernstige leemte in ons behandelingsmetodes is, is op die gebied van urologiese kwale by vrouens. Dit is alte dikwels die ondervinding van die uroloog dat 'n pasiënt na hom verwys word met 'n geskiedenis van herhaalde aanvalle van ‚blaasmoeilikheid' of ‚koue op die blaas', wat etlike jare lank al aan die gang is, en waarvoor sy van verskeie geneeshere allerhande behandelings ontvang het sonder enige blywende sukses.

Dit wil voorkom of daar dikwels by die praktisyn die neiging is om enige dame wat urologiese klagtes het, as 'n potensiële ginekologiese probleem te beskou en baie selde primêr as 'n urologiese geval. Kom daar egter 'n manlike

pasiënt wat kla oor herhaalde urinêreinfeksie, sal hy baie gou vir die pasiënt die regte behandeling voorskrywe. Om een of ander rede is daar blykbaar 'n leemte in die algemene praktisyn se benadering van hierdie moeilikheid by die vrou en daar word heel dikwels nie besef dat by menige vrou daar 'n obstruktiewe blaaskwaal teenwoordig is, wat die grondoorsaak van haar moeilikheid is nie.

In baie gevalle is hierdie obstruksie relatief, in die sin dat dit in werklikheid te wyte is aan onvolledige lediging van die blaas as gevolg van gevorderde uitsakking van die blaasbasis. Die aangewese behandeling is dan natuurlik die herstel van die blaasuitsakking. Daar is egter 'n groot groep gevalle waar daar geen besondere afwyking in die blaasbasis gevind kan word nie—'n soort toestand wat ons nogal dikwels teëkom in die nullipara-vrou of in die jong dame—en wat eintlik primêr 'n obstruktiewe toestand van die blaas is. Uit die aard van die saak is dit baie moeilik om by enige vroulike pasiënt 'n geskiedenis te kry van vermindering in die sterkte van haar stroom of die kaliber van die stroom as sodanig. Trouens, dit is die ondervinding dat baie vrouens wat spesifiek hierom gevra word, onskuldig te kenne gee dat hulle heeltemal normaal water. Na so 'n obstruktiewe letsel verwyder is, is hulle verbaas om te sien wat dit is om normaal te kan water.

Dit is ook van belang om daarop te let dat in baie van hierdie gevalle, waar daar werklike perifêre obstruksie tot die uitvloei van die urine is, daar nie noodwending 'n baie groot urinêre res teenwoordig is nie; nogtans sal hierdie pasiënte aanhoudende aanvalle van urineinfeksie kry, waarvoor hulle jaar na jaar na hulle dokter gaan sonder dat die werklike oorsaak van die moeilikheid opgelos word. Dit sal goed wees om hierdie moontlikheid in gedagte te hou wanneer hierdie soort pasiënt om hulp aanklop.

THE POST-PHLEBITIC LEG: FURTHER EXPERIENCES

WILLIAM GIRDWOOD, CH.M. (RAND), F.R.C.S. (ENG.), F.R.C.S. (EDIN.), *Johannesburg*

This paper presents further experiences gained from over 200 cases of strip grafting, an operation which I described in 1950.[1] A review of 100 cases so treated was published in 1955.[2]

The principles of Operation are as follows:

1. The lower medial aspect of the leg in man is ill equipped for complications of varicose veins, viz. thrombophlebitis, post-phlebitic congestion, 'blow-outs', infection, induration and ulceration. Essential differences exist between the medial and lateral aspects of the lower leg (Fig. 3).

2. The case must be assessed as a whole with regard to age, occupation, walking ability, adiposity, cleanliness, varicosities, blow-outs, induration of the 'isolated cuff' and ulceration, and arterial state.

3. Excision of the virtually irreparable tissue (with the potentialities of further recurrences of ulceration and infection, oedema and thrombosis, dermatitis, pain, and even carcinoma) is needed in order to replace it by healthy skin graft on muscle.

4. As the major pathological lesions and symptoms are in the area of the medial side of the lower leg, the operation is a direct attack on the 'focus of interest',[1] and excises the 'isolated cuff', deals with the varicose veins feeding it and 'blow-outs' (only attacked by the local operation), and excises deep scar tissue, which is occasionally extensive.

STRIP GRAFTING IN INDURATED MEDIAL LEG ULCERS

In operating on these cases it has been found that the best results ensued when a large area of skin was removed, including all the area of induration and ulceration on the medial side of the leg. A relatively large area of skin graft on muscle must lie adjacent to dangerous situations such as over bone and malleolus. It is essential to excise fascia so as to expose soft subfascial tissues. All varicose veins are removed, especially incompetent communicating veins (in this article called 'blow outs'). Thi spart of the operation, which was used extensively even before strip grafting was started in 1942, and was recorded in 23 cases of strip grafting in 1950, had been meticulously described by Linton[3] 10 years previously. Cockett and Edgar Jones,[4] in 1953, recorded two cases of eradication of supramalleolar perforator veins ('blow outs') as if this were a new procedure, without reference to Linton's classic work on the problem.

It has been assumed by some that the treatment by strip grafting is just a graft to the ulcer area. This concept is entirely erroneous. The problems of the post-phlebitic leg are many, and neither an immediate or permanent result can be achieved by a mere skin graft to the ulcer region. Every aspect of the pathology must be considered and treatment directed to all the aspects contributing to the disease. Attention is called to Figs. 1 and 10 in my 1955 article[2] where these aspects are set out in graphic form.

Pre-operative Selection

There are certain types of patients in whom operation is contra-indicated.

1. *The elephantoid leg* (Fig. 1). This worst type of post-phlebitic leg, where all the vicious cycles have existed, is complicated by osteitis, gross infection and ulceration (often with *Bacillus proteus* present), gross congestion of the limb on standing, a fixed ankle, and furry skin thickening of the foot, presumably from chronic lymphatic obstruction and skin stricture at the ulcer region.

2. Neglectful patients who cannot see below their knees or bend to attend to their limbs, or do not trouble to attend to minor injuries or maintain a minimum degree of cleanliness of their legs or anywhere else. This does not exclude the very adipose as long as care can be and is given to general cleanliness.

3. Unless a patient is prepared to remain at bed rest until there is complete healing, dependent granulation tissue will develop and infection and chronicity in a small unhealed area of the graft will lead to disappointment.

4. Systemic conditions may present contra-indications. e.g. diabetes, arterial blockage and syphilis.

5. Lateral ulcers (Fig. 2) require special consideration. A supramalleolar ulcer may be associated with varicosity of the small saphenous tree, or it may be fed by a 'blow-out' on

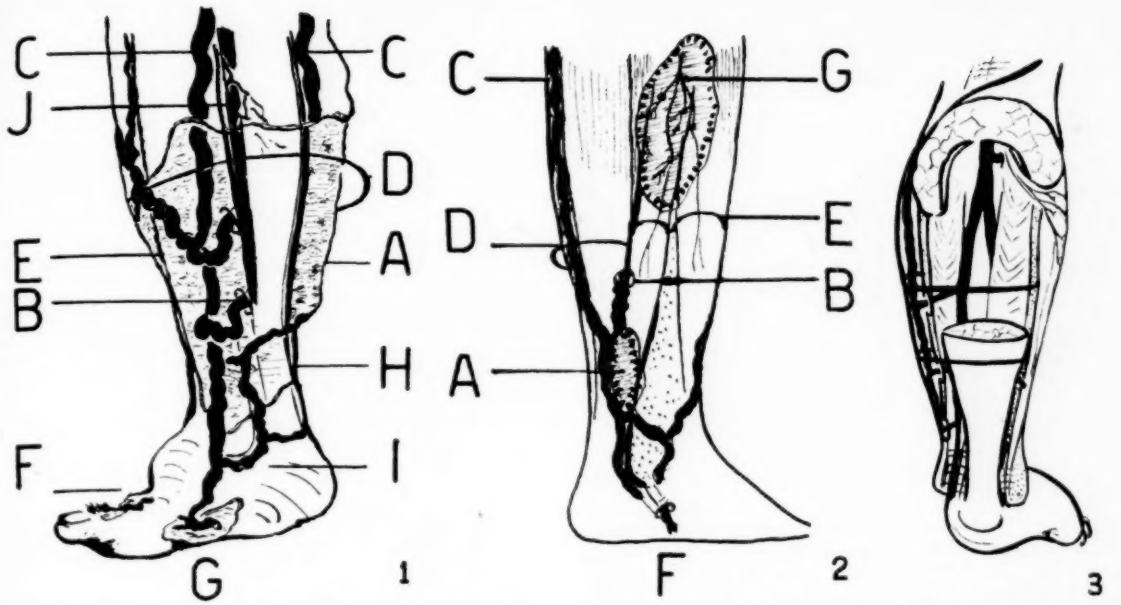

Fig. 1. Advanced incurable 'elephantoid' case. A=Large ulcer and indurated tissues. B=Large supramalleolar medial 'blow-outs'. C=Superficial feeder varicose veins. D=Extent of 'isolated cuff' of induration. E=Ulcer on tibia, with periostitis. F=Furry base of toes, ulcers at base of toes. G=Foot 'blow-out' and lateral foot ulcers. H=Skin stricture. I=Stiff ankle. J=Deep veins straight and incompetent, muscle fibrosed and avascular.

Fig. 2. Lateral ulcers. A=Supramalleolar lateral ulcer with underlying venous pool. B='Blow-out' feeding ulcer in post-phlebitic. C=Lesser saphenous varicosity feeding ulcer in varicose ulcer. D='Isolated cuff' lateral extent. E=Fascia over lateral muscles attached to them and intervening septa. F=Lateral foot 'blow-out'. G=Multiple arterial perforators. These supply overlying skin as well as muscle. Note area of high lateral ulcer.

Fig. 3. Illustrating medial and lateral sides of leg (see text).

the lateral side, when it is likely to be post-phlebitic. Lateral ulcers do not become indurated as on the medial side of the leg. When down to tendons they may be chronic, and the base is then avascular from the bloodless tendon base. However, when the ulcer is in the middle of the lateral side, or higher, syphilis and arterial blockage, usually from atherosclerosis, with obstruction of the lateral popliteal artery must be foremost in the mind. Beware of lateral ulcers, expecially when there is osteitis with periosteal thickening on X-ray.

Technical Improvements

Experience shows that even in the hands of excellent surgeons the details of strip-grafting technique have not always been followed as described. The posterior part of the incision is made first, cutting through to subfascial tissue, and a finger is directed below fascia and scissors used, cutting through this plane and continuing right into the ankle. In some of the worst cases in the region of the retinaculum of the ankle it is wiser to do the subfascial dissection as a separate procedure, until the soft base is widely exposed throughout. Deep penetrating septa of scar tissue may be present at the ankle, sometimes becoming indistinguishable from the tendo achillis and, on rare occasions, even extending right through to the lateral side, where there may be lateral ulceration as well. Under fascia all the fascia and subcutaneous tissues lift off in one and include the ulcer and indurated tissues inseparable from the fascia, and as the incision is turned anteriorly the great saphenous vein is reached, and when it is dilated and varicose and thickened it is divided and stripped to the groin. As the incision extends distally there may or may not be 'blow-outs' with definite holes in the fascia through which the veins pass, usually large and dilated, even in the lying position. Usually two or three are found, sometimes only one large one, and sometimes none.

There is no contra-indication to excision and grafting well over the malleolus and tibia. In the latter case, if the extension of ulceration is well over the tibia, it is wise to graft laterally as well, to obtain as much grafting on muscle as possible in the neighbourhood of suspect areas.

I have called the area of excision the 'Isolated Cuff'. This describes the tissue superficial to the hand passed under fascia, over the calf muscles, and extending from the fibula laterally to the tibia medially. It becomes grossly congested on standing when there are varicose veins of the great and lesser saphenous trees, and even more so when there are underlying 'blow-outs'. The size of the induration will depend to some extent on the presence of a double varicose system, and whether these thrombose or not, but the subcutaneous tissues of the 'isolated cuff' are subject to induration whenever thrombosis, infection, ulceration, haemorrhage, trauma, necrosis, widespread skin eruptions, or dependent granulation tissue occur. Induration is peculiar to the medial side because of the relative isolation of this 'cuff'. On squeezing this tissue

after excision, a white lymph escapes, presumably collected from poor drainage of lymph from the 'isolated cuff'. Oedema is the rule, and intolerable tissue tension is presumed to occur in the sudden attacks of diffuse erysipeloid infections, blistering necrosis, and suddenly developing massive ulcerations.

I consider the medial side of the leg to be the venous side as compared with the lateral 'arterial side' (Fig. 3). The differences between the medial and lateral sides of the lower leg are as follows (they are discussed later):

MEDIAL

Fascia is isolated from muscle.
Tissues superficial to fascia form an isolated cuff.
Medial side is venous side, containing the long saphenous vein, communicating veins, post-phlebitic 'blow-outs', and varicose and post-phlebitic ulcers.
Venous flow is through long saphenous or poorly supported intermuscular channels on exercise.
Induration is common, and may progress to skin stricture.
Lymphatic obstruction in 'isolated cuff'. The medial side drains deep haematomata (e.g. 'ruptured plantaris', and deep inflammatory exudate (e.g. calf abscess after septic thrombosis).

LATERAL

Fascia is attached to muscle.
Tissues superficial to fascia intimately related to muscles.
Lateral side is arterial side. Lateral popliteal artery obstruction causes skin and muscle necrosis in upper half. Lateral tendons form an avascular base in lateral ulcers.
Venous flow is through short saphenous or well supported intermuscular and usually intramuscular channels.
Induration is not present.
'Blow-outs' unusual.

Size. In the early grafts the extent of the excision of the ulcer and indurated tissue and fascia was too small, and in several cases induration persisted and ulceration recurred; when a large excision and graft was done, permanent healing resulted. It is a feature of large strip grafting on muscle that surrounding indurated tissues soften; the healthiest portion of the leg is now in the centre of the graft.

Even when the area of excision appears relatively large, considerable contraction occurs later. The degree of take is important, for scar in the region of the graft, especially if near bone, is to be avoided.

Bevelling. By cutting the edge of the skin obliquely the appearance is considerably improved. This is important in the adipose, but in thin patients the surface of the graft is level with surrounding skin.

Two-stage Procedures. In occasional cases, especially in bilateral grafts, the excision of scar is done under a bloodless field. Tulle gras is placed on the raw area and pressure applied with tie-overs of silk. At the end of a week a red healthy granulation tissue has formed evenly on the base and the skin graft can be applied without further preparation.

A bloodless field and grafting at the same time has not been entirely satisfactory in the few cases in which it has been used. The thin areolar covering to tendons, especially on the lateral side of the leg, seems to withstand the period of vascular obstruction poorly, expecially when a graft with pressure is added to the bloodless stage of excision. Tendon slough has occurred, and this has taken longer to heal than the usual period of graft healing.

Dressing and Immobilization. By encasing the leg below the knee in plaster of Paris, the nursing and the post-operative handling is greatly simplified. The plaster is left undisturbed for about 4 weeks if the patient is comfortable and there is no strong odour after 4-6 days. This makes dressings unnecessary until after the plaster is removed, and then there is often little to be done when the graft has taken well. When an odour is apparent after a week the plaster can be removed, but this is unusual.

Meticulous Attention to prevent 'Dependent Granulation Tissue'. The patient must be treated with the leg elevated until there is complete healing. The usual period is 6 weeks, but an extra period until the graft and incision lines are strongly healed is always worth while. Hurrying over the last little bit of healing and allowing the patient up and about is likely to lead to persistent oedema and congestion, an encouragement of an unhealed area and perpetration of a chronic ulcer.

Pressure Dressings. These may be of a variety. The usual method is to apply gauze, cotton wool or liquid paraffin soaked cotton wool over the grafted area and then to apply crepe bandages very evenly from the base of the toes to just below the knee. Three bandages are used, according to the size of the leg, and over these bandages elastoplast is rolled. Pressure dressings are kept on for 3-4 weeks at a time and the patient allowed to do increasingly more walking. An alternative method of pressure dressing is a double stockinette with foam spong rubber over the graft between the two layers of stockinette and sewn into place and, over this, further crepe bandages. Occasionally plaster of Paris well padded is used when there is a linear pull on any area of the graft, with still poorly healed skin over this area. Immobilization ensures strong healing. Sometimes patients are sensitive to bandaging or heat and, with a well healed graft, occasionally a patient can be allowed graded rising, walking and exercising, without any temporary period of compression bandaging.

Sensitivities have occasionally been prominent complications. This has happened with the use of Cetavlon in cleansing, and considerable extra bed-rest dressings may result from this type of sensitivity.

THE RESULTS

These are essentially similar to those published in September 1955. The follow-up period now dates back to 1942, i.e. 16 years.

1. Recurrent ulcers may be due to:

(*a*) Technical errors such as untreated feeder varicosities, 'blow-outs' or deep-vein incompetence, or to a poor take in an area related to tendons or bone, or to too early rising. If massive ulceration occurs over bone after strip grafting, a cross leg, thigh to ankle, skin flap has proved satisfactory.

(*b*) Small sores may develop into large ulcers in patients who cannot obtain leave of absence for bed rest, or in whom neglect, uncleanliness, or obscured visibility is present so that *B. proteus* complicates the ulcer. Bed rest and dressings will result in healing more rapidly after strip grafting than before.

(*c*) Ulceration away from the graft, usually on the other side of the ankle (lateral), is not uncommon. Here a perforation 'blow-out' or a missed short saphenous varicosity must be considered. Grafting is only done when there is extensive skin involvement, and extensive subcutaneous venous pooling.

With selection of cases, the recurrence rate is not frequent, and excluding technical errors and ulceration on other parts of the leg, it is now no more than 16%.

2. *Pain is relieved* in all cases, and cases strip-grafted on one side and incised and sutured on the other consistently

prefer the grafted side, and return for strip-grafting of the other leg in later years if this other leg develops pain, induration and ulceration.

3. *Sensitivities* generally disappear. The immediate results are good. There appears to be a focus in the indurated tissue which acts as a trigger to generalized allergic skin reactions.

4. *Oedema disappears* as the patient walks more and exercises the calf and ankle. A period of oedema after removal of the compression bandages is usual in the elderly, adipose and inactive, but this improves.

Occasionally a painful limb with or without persistent minor ulceration may occur with femoral thrombosis, which requires anti-coagulants and bed rest, followed by graded activities and walking with support for relief.

5. *Foot Deformities.* As has been pointed out, claw toes, shortening of the tendo achillis, and aggravation of congenital deformities, are a common feature in chronic leg ulceration and induration, and walking without pain must be established to get good final results (Fig. 4).

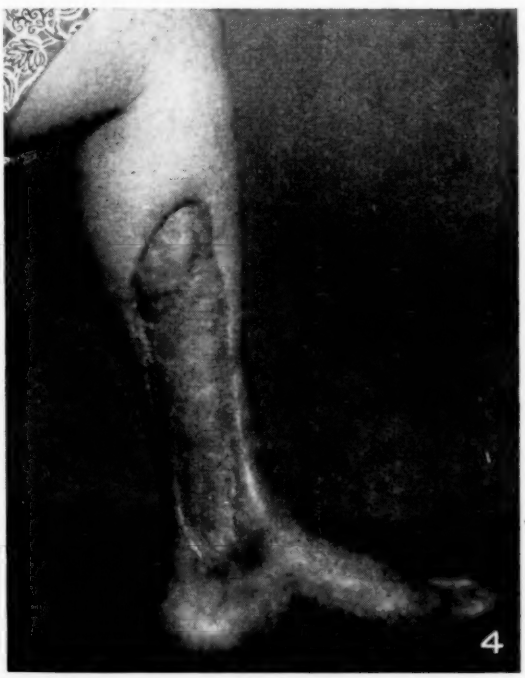

Fig. 4. Strip grafting: good final result.

It is apparent that the *focus of interest*[1] is in the region of the lower leg medially, mainly in the area of the 'isolated cuff',[2] which is the name given to the tissues in this region, so prone in man to suffer from induration and ulceration. Here, there may be distended varicosities and 'blow-outs'; lymph accumulates; inflammation results in slough, thrombosis, intolerable tissue fluid tension and diffuse skin reactions; necrosis, including endothelial and fat necrosis, is poorly resolved; scar and chronic ulceration persist; and skin stricture, circular induration and ulceration may follow. With pure varicose veins, the most dependent part of these varicosities is in this area, and when both systems are varicose there is a tendency for greater induration than when only one system is affected.

When there has been a deep-vein thrombosis re-vascularization may be satisfactory,[1] with re-formed muscle veins and resultant absence of varicosities, oedema and cyanosis or incompetent deep veins. The re-vascularization, however, is commonly unsatisfactory.

The result of the development of collateral veins, which are dilated normal veins and therefore incompetent, and the re-canalization of thrombosed veins, is invariably an increased volume of blood in the standing position, with incompetence of affected veins.

Calf Muscle Pump. With systole and diastole of the calf muscle pump[2] under normal conditions the blood in the superficial tissues is sucked into the deep veins and carried upwards by reason of the adequacy of the valves of the deep vein. Pumping as a factor in venous return can only take place when there are favourable conditions, namely, no 'blow-outs' and normal non-distended receiving veins with functioning valves (Figs. 5 and 6).

Clinical Test. A useful clinical test[2] consists of making the patient stand and examining the area of varicosities in the lower leg. The patient is asked to exercise by raising and lowering the heels, and the alterations in pressure are estimated by the palpating finger. The feeder vein (great saphenous and/or lesser saphenous) is compressed at knee level and exercises continued. Alterations in pressure are again estimated by the palpating finger. When a noticeable reduction in pressure can be felt on eliminating the feeder vein, then the calf muscle pump must be working, and a significant 'blow-out' cannot be present. When no significant reduction takes place the case may be called complicated, i.e. complicated by major 'blow-outs'. A positive reduction in pressure indicates the perfect case for eradication of the affected varicose vein tree feeding the area. A negative pressure test indicates a necessity for effective attack on the areas of the 'blow-outs'.

It can be appreciated that neither ligation of deep veins or grafting of deep veins can have the slightest effect on the efficiency of the calf muscle pump as long as the locally incompetent 'blow-outs' are still present. The relatively poor support against incompetence above the knee even in the normal, and the relative ease by which obstruction is overcome by recanalization and collaterals, makes attempts to introduce artificial valves and ligate deep veins almost ludicrous.

The veins from behind the lateral malleolus drain through intramuscular channels mostly (Fig. 5), whereas on the medial side the blood flows through intermuscular channels and is less well supported. On venous obstruction or high pressure above, the muscles will force the flow of blood into the intermuscular channels, and in a reverse manner through the communicating veins, establishing 'blow-outs' on the medial side in the region of the isolated cuff (Fig. 6).

In the presence of a greatly increased volume of blood in superficial varicose veins, it is conceivable that distension of communicating veins might follow, and subsequently too even of the deep veins. In either case 'blow-outs' would be established, with loss of effective pumping action of the calf pump. As the late stages of varicosities are indistinguishable from post-phlebitis in this respect, such a course is quite

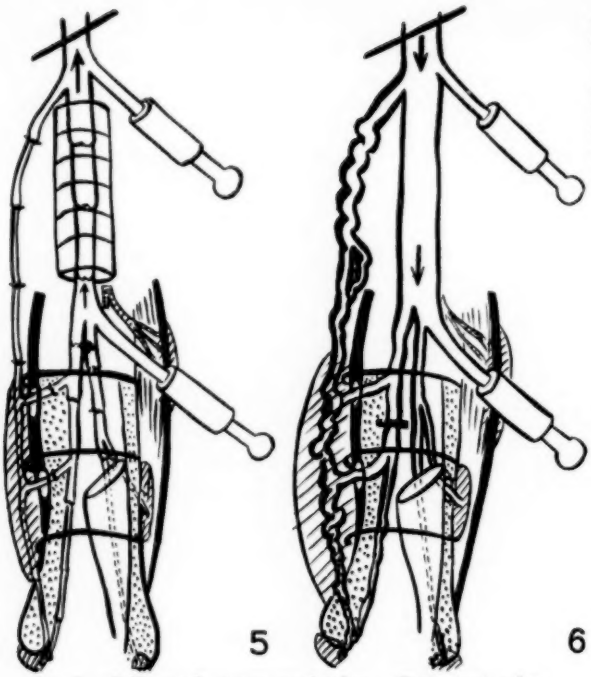

Fig. 5. Calf muscle pump mechanism. Competent valves above. Flow on exercise through competent communicating veins by reason of diastole of pump.
Fig. 6. 'Blow-outs' in obstruction. Deep-vein incompetence. Dilatation of deep venous tree.

possible although it is in the post-phlebitic that 'blow-outs' are commonly, and even early, established.

THE ARTERIAL CIRCULATION

It is quite apparent that in the post-phlebitic leg muscle pumping does not effectively assist venous return, and furthermore there is gross venous incompetence with dilatation of veins, so that a greatly increased amount of blood surges into the legs from the venous side when the standing position is assumed. The flow obviously goes on in this position. This inevitability of venous return brings into consideration the part played by the arterial circulation in limbs in the standing position, and especially in varicose and post-phlebitic legs.

It has been established that the blood in varicose and post-phlebitic and ulcerated legs is by no means in a state of stasis. The oxygen content in a vein from such a leg is actually increased.[2] Further, the arterial pulses on standing are greater than on lying, the oscillometric pressure and blood pressure are higher, ulcers may bleed on standing (and not dark deoxygenated blood) and stop bleeding on elevation, and a cut vein bleeds copiously in a strong pink oxygenated flow from the distal cut end.

Duffield and Harris[5] showed how, with venous obstruction, the capillary pressure invariably rises immediately to higher levels than the venous obstruction, within the bounds of systolic pressure.

There is an inevitability of venous return contingent on arteries capable of delivering the pressure, and it is redundant to suppose the arteries more fully occupied in this regard in the standing than in the lying position, and in the venously engorged varicose and post-phlebitic leg than in the normal.

The small arteries show peculiarities characteristic for this service. In excised areas it is common to find hypertrophy of small vessels (Fig. 7). When extensive incisions and excisions are performed considerable bleeding is the rule, but within seconds of applying pressure on a large swab the bleeding will cease, except for the distal ends of large veins that have been cut. This shows considerable tone in small vessels in the post-phlebitic leg, a tone vitally necessary to cope with the pressure in the standing position and the emptiness of veins in the elevated state. With an indurated and inflamed 'isolated cuff', this hypertrophy of small vessels may be complicated by inflammatory cellular infiltration with endarteritis and periarteritis, and these changes may be important in the tendency in this area to get occasional stasis, thrombosis and necrosis.

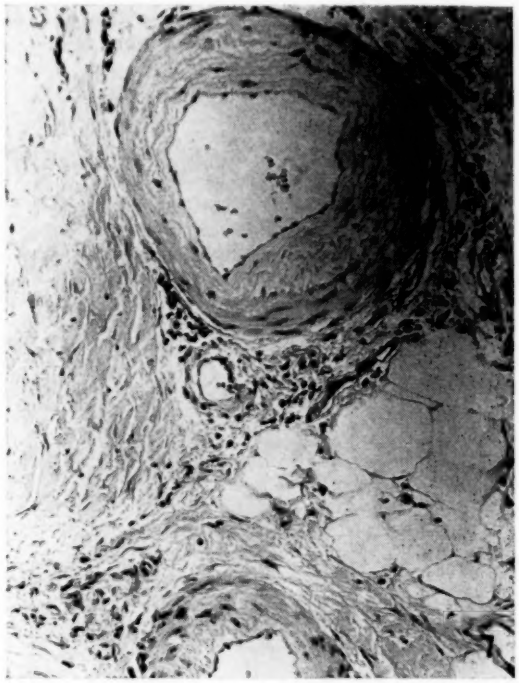

Fig. 7. Thickened vessels in indurated cuff (excised)

Selective arterial responses are present, as is well shown in the response of the capillaries of the toes when the hands are heated, and the almost negative response of the ulcer region. This must mean either absence of capillaries here, or a shunting past the capillaries in the ulcer region through larger vessels. It is also a feature of this patient that although grossly increased circulation may occur through areas where there are dilated vessels, the feet are often cold and sweaty, and even on standing there may be no evidence of the greatly increased flow in the visible portions of the feet and toes.

If such arterial response does occur it must apply where pressure most calls for such a response, where venous pressures are highest, that is in varicose trees or 'blow-outs', and even in deep and superficial distended systems, but consistently

in the area of the 'isolated cuff'. The well supported ankle veins may protect the feet except in the worst cases, when on standing even capillaries dilate under pressure and under the influence of metabolites ('the flush syndrome').[1]

This local arterio-venous response is applicable to states such as local varicose veins, capillary and cavernous haemangioma, traumatized varicose veins, and dependent granulation tissue.[2]

DISCUSSION

The presence in a late post-phlebitic of a large patent femoral vein above an apparent obstruction is intriguing. This may be seen in venographic studies or at operation. Cramps and venous congestion on standing have often been relieved by division of this vein. The only likely explanation is that venous obstruction had resulted in distension of the venous tree below; dilatation of collaterals and late venous incompetence; increased volume and increased flow; and distension of the venous tree above.

Gibbs,[6] in a recent publication, has stressed the importance of the calf veins. He states: 'During the greater part of life a progressive increase of body weight occurs and thus the muscles of the calf contract against a steadily increasing load. The greater metabolic requirements of the muscles are met by an increase of blood flow through them. The veins therefore increase in diameter, and further anastomoses are opened up to accommodate the augmented venous return. The intramuscular veins particularly of the soleus muscle become very large and may exceed the diameter of 1 cm.' And he speaks of 'blood pools in the inert reservoir of venous blood in the soleus muscle'.

Such a concept of a tendency in increased age for blood to accumulate in the veins of the legs cannot go unchallenged. Rather may it be stated that with age, as the veins lose their tone, and there is increasing abdominal pressure and stretching of supporting structures, venous incompetence occurs. Veins dilate, valves become incompetent, and veins are filled from heart to feet on standing. This is the whole story of the dilated venous bunches in the soleus; and of course age alone is not the whole story. It is when there are varicose veins, or post-phlebitic venous incompetence with distension of veins, that the leg veins will dilate—mostly where the veins are least supported (i.e. in the intermuscular veins and superficial veins) rather than in the well supported intramuscular venous pools, if these still exist after extensive thrombosis.

A greater comprehension of the problem now becomes possible. The eradication of dilated venous trees will reduce the flow and congestion. Rest will restore tone in veins. Isolated divisions of deep veins may play a part temporarily. Supported deep channels must be kept patent and when the volume of blood is diminished by eradication of varicosities distally, rest may restore a dilated deep tree to normal. Nature abhors venous obstruction, so that if the wrong vein is ligated collaterals will restore flow as long as the arterial circulation is normal. Division of a dilated incompetent deep venous tree will only act temporarily in reducing venous inflow to the leg, and the volume of blood will still remain if varicosities are untreated, and new dilated collaterals will inevitably form; the result will be a return to the state as before the deep-vein ligation.

In the area of the 'isolated cuff' a consistently increased flow of blood without complications is unusual. Oedema diapedesis, tissue fluid tension, haemorrhage, thrombosis, inflammation, necros s and irreparable changes are the rule. The inflammatory changes affect the arteries too, and this may be important in the presence of intense congestion, oedema, exudates, and necrosis.

In a leg afflicted with late varicosities, or the post-phlebitic state, in which a labile artereolar adjustment has become established and in the standing position an increased vascular flow is present, arterial blockage may produce little clinical effect. The development of collaterals during the period of adjustment to the venous disturbances serves well later. The term 'masked arterial disease'[4, 5] has been used to describe this state.

Having accepted the phenomenon of increased venous pressures causing a corresponding increase in arterial pressures, and noting the inevitable increased oscillometric pulsations in post-phlebitics with or without ulcers and complicated varicose veins, it has been natural specially to observe patients with different types of venous disease who are known to have arterial disease.

A case may present with post-phlebitic or late varicose ulcers on the medial side of the leg, and by mere accident the popliteal artery may be found to be blocked. A case may be instanced where there had been no symptoms of arterial disease, no intermittent claudication, no distal pallor or rest pain, and only on treatment of the gross varicose veins, with enforced lying in bed, did this patient develop gross sloughing and gangrene—necessitating amputation.

Several cases have been observed with varicose veins and blockage of the popliteal artery without any form of arterial symptoms. In another case, in which amputation was necessary in one leg (arteriosclerotic with atheroma), and arterial studies demonstrated arterial disease in the other, with partial blockage, a subsequent clinical venous thrombosis of the leg passed through a phase of cold oedema but shortly became warm and healthy, without clinical foot pulses or oscillometric pulsations below the knee.

It is contended that in venous disease (varicosities and post-phlebitics) a maximum veno-arterial dilatation is present in standing and walking, and this stimulus to the arterial circulation through its branches and collaterals may mask underlying arterial blockage in the main vessel and may even be a protective influence against gangrene. In patients who are elderly, and therefore may have vascular obstruction, eradication of varicose veins should not be viewed with any degree of confidence in its safety.

SUMMARY

The author's previous communications on the syndrome of the post-phlebitic leg are mentioned.

The differences existing between the medial and lateral aspects of the lower leg are outlined.

The significance of 'blow-outs', and a clinical test, are discussed.

The arterial response is considered in connection with the inevitability of venous return.

The further experiences in 200 cases of the operation of strip grafting, which the author introduced, are presented.

REFERENCES

1. Girdwood, W. (1950): S. Afr. J. Clin. Sci., **1**, 114.
2. *Idem* (1955): S. Afr. Med. J., **29**, 399 and 906.
3. Linton, R. R. (1938): Ann. Surg., **107**, 582.
4. Cockett, F. B. and Elgar Jones, D. E. (1953): Lancet, **1**, 17.
5. Duffield, F. A. and Harris (1934): J. Physiol., **81**, 283.
6. Gibbs, M. (1957): Brit. J. Surg., **45**, 15.

REGIONAL ANALGESIA IN SURGERY*

M. ARNOLD, F.R.C.S. (EDIN.), *University of the Witwatersrand, Johannesburg*

Why do I choose to speak on this subject when the practice of general anaesthesia seems to have reached such sublime heights? Because after a certain proportion of routine operations, for which general anaesthesia has been the rule for many years, complications still arise which we, as surgeons, cannot in all honesty attribute to the operative procedure itself. The patient may leave the theatre apparently in good health, but shortly afterwards we are summoned to his bedside to find him mysteriously stricken by seeming witchcraft.

The actual cause is a serious disturbance of his normal physiology. It is apt to occur during general anaesthesia because it requires exceptional skill to maintain for more than a short period the optimum levels of oxygen, carbon dioxide, anaesthetic and relaxant. General anaesthesia is not just a science—it is also an art. It takes an artist to maintain the correct composition of the inspired gases. If the oxygen level is high, it is so at the expense of the anaesthetic, and *vice versa*. If relaxation is inadequate, there will be more trauma when muscles are retracted, and hence more shock and post-operative pain. It is also difficult to control respiration when the respiratory muscles resist the rhythmic compression of the re-breathing bag. Efficient carbon-dioxide absorption presents another major problem. Reliance may be placed on mechanical apparatus. The various gauges may show what exactly is being administered, but they cannot possibly guarantee what the patient is actually getting.

Under regional analgesia, one is reasonably assured on at least 5 points.

1. The operation is painless. This cannot lightly be assumed when the patient is being given a general anaesthetic and a relaxant, and is hence unable to show any reaction other than weeping silently and unseen beneath the sterile drapes.
2. The amount of shock is minimal and usually negligible.
3. The possibility of post-operative vomiting and coughing is more remote, and suture lines have more chance of holding.
4. The amount of post-operative pain is less, and hence the need for narcotics and the dangers of the commonly associated respiratory depression are less.
5. The patient's physiology is practically undisturbed. Post-operative complications in general are less frequent. Venous thrombosis is less likely if muscle tone is unaffected, and the patient can be encouraged to exercise his lower limbs during the operation. Respiratory complications are less frequent. An advantage which is difficult to assess is the ability of the patient to change from an irksome position during the operation as one does during normal sleep.

Why is general anaesthesia more popular? It is not because locals are not safer, but because the surgeon is more a surgeon than an anatomist. When the patient is an old man with a failing heart and a strangulated hernia, preference for local analgesia is universal and unanimous. Logically, if it is safer for the hazardous case, it must be so for the non-hazardous case. There are other hazards. Take the case of a child who falls from a tree soon after a meal, sustaining a supracondylar fracture of the humerus. Prompt reduction is highly desirable. Should one think in terms of a stomach wash-out, with its associated psychological trauma, in preparation for general anaesthesia, or simply a sedative and a brachial block?

What are the objections to local analgesia? No surgeon likes to admit that his anatomy is rusty, or that his technique is too rough for a conscious subject who will resent rough handling of the surrounding unanaesthetized tissues, or that he dislikes to have to maintain a quiet atmosphere in the theatre, or that frankly he can't be bothered. Instead, he says that locals are time-consuming, or that the patient is an unsuitable type.

Let us not exaggerate the time factor, which admittedly exists when the surgeon is his own anaesthetist. While one should not begrudge the time expended in the interests of safety, and while conceding that patience is an often necessary virtue if the infiltration is not as precise as it might have been, the delay in an average case of hernia is 5 minutes; a brachial block takes 3, and a sacral 4-10. Of course, the objection falls away if our specialist anaesthetist has mastered the routine techniques. As for the second red herring, premedication is so safe and simple today that unsuitable types are very, very few and far between. A barbiturate the night before, perhaps with a tranquillizer; an hour before operation an ampoule of omnopon-scopolamine; sensible psychological aids such as a light bandage over the eyes, cotton-wool ear plugs, and a silent theatre (though there is something to be said for soft music); gentle technique; and in most cases the patient snores throughout his ordeal and remembers very little of it. In hernia operations, he may be awakened if the surgeon wants him to cough to test the efficiency of the repair.

In South Africa, the country practitioner is often required to operate under circumstances where general anaesthesia, especially in combination with safe yet adequate relaxation, is often not available. Surely regional analgesia is the answer in those cases where its technique can easily be mastered? Intra-abdominal surgery presents a bigger problem, and few surgeons care for the tedious technique of multiple intercostal blocks and posterior splanchnic block; but an outstanding indication for local analgesia is as an adjunct to general anaesthesia to lessen neurogenic shock. This applies to gastric, biliary-tract and intestinal operations especially. After the abdomen has been opened, it is a simple matter to infiltrate the omentum or mesentery under vision, and there is no reason why this step should not be routine.

While on the subject of restricted rural facilities, one other great advantage of local analgesia should be mentioned. The patient does not need a special nurse to remain in attendance until his reflexes have returned.

Historical Note

A 1750 text-book of surgery commences its description of the operation for vesical calculi with the words—'The patient having been properly secured . . . .'

The history of modern anaesthesia commenced in about 1844 with the discovery of the anaesthetic properties of nitrous oxide, ether and chloroform. Nothing in the history of medicine can compare with that discovery—no single achievement in the past or foreseeable future. The discoveries of antisepsis and asepsis cannot compete. Without anaesthesia, we should have benefited little from these. It is interesting to ponder for a moment on what might have been the course of medicine had the introduction of cocaine and its derivatives preceded that of the volatile anaesthetics by half a century. With that start, the art of local analgesia might well have reached a stage of perfection far beyond its present state. A stage may have been reached when a patient would have rejected a general anaesthetic for a localized lesion as he would today reject amputation of a limb for a crush of a terminal phalanx.

Unfortunately, the reverse sequence occurred. Though the hypodermic needle was invented in 1853, by Alexander Wood of Edinburgh, he had no local anaesthetic to inject until 1884, when Koller introduced cocaine to the medical profession. Tragedy attended the use of cocaine so frequently that local analgesia fell into disrepute until 1904, when Einhorn synthesized novocaine. Today it has several worthy rivals, but its safety, simplicity and effectiveness have stood the test of time.

Precautions

Toxicity. All local anaesthetics are tissue poisons; they should be localized to the area of infiltration and prevented from spreading to higher centres. Injections should therefore not be intravascular or into the sub-arachnoid space, should be given slowly, combined with adrenalin to retard absorption, should be as dilute as possible, and should be confined by a tourniquet in limb surgery.

Aspiration Test. It is not enough to fail to obtain blood or C.S.F. on attempting aspiration. The needle may be blocked. If no fluid is withdrawn, inject 2-3 minims and watch the syringe closely to make sure that there is no leak. Then try aspiration again.

Sensitivity. Proved instances of novocain sensitivity are extremely rare. Before indicting the drug, one must exclude sensitivity to adrenaline, emotional reaction, too rapid injection, or injection into the blood-stream or sub-arachnoid space. With

* Paper read at the First Congress of the South African Association of Surgeons, Cape Town, April 1958.

proper precautions, I feel that the possibility of sensitivity can be ignored.

Technique

It should be a rule that the patient should feel only one painful prick of the needle, and that while the point is being advanced, the plunger of the syringe should be steadily depressed so that the solution is in advance of the point. Subsequent injections should be made through a secondary wheel raised slowly from below the surface.

Brachial block. The patient lies supine, with the head turned to the opposite side, and the shoulder on the affected side depressed. This opens up the posterior triangle of the neck without undue stretching of the tissues. The landmark is the first rib, just lateral to the sternocleidomastoid and above the palpable pulsation of the subclavian artery. After raising a wheal, a 1½-inch needle is inserted vertically *backwards*, aiming at the rib. If this prescription is followed, it will be impossible to pierce the pleura medial to the rib, or the artery, below the wheal. If paraesthesia is elicited, 20 c.c. of the solution (2% novocaine to which has been added 3 minims of adrenaline 1 in 1,000 and 3 minims of hyalase solution) is injected, provided that no resistance is felt. If there is resistance, the needle may be in a nerve trunk (probably the lower trunk) and should be withdrawn slightly. Usually the rib is felt without eliciting paraesthesia, and the injection is made after withdrawing the point slightly to clear the periosteum. Another 20 c.c. is spread more laterally to catch the middle and upper trunks. A practical test for the success of the block is to ask the patient to raise both arms above his head. If the affected limb lags behind, analgesia can be assumed. It is unwise to ask the patient if he can feel the prick of a needle, as he is very apt to confuse pressure with pain. A better test is to transfix a fold of skin slowly and watch his reaction.

Sacral block. The patient lies prone, with the buttocks raised on a bolster or rolled pillow. The landmark is the sacral hiatus, below the 4th (sometimes the 3rd) spine. It accommodates the tip of one's index finger snugly. After raising a wheal, a rigid 2-inch needle is inserted at 30° to the plane of the sacrum until it is felt to traverse the resistance of the tough ligament which covers the hiatus. The syringe is then lowered to the plane of the sacrum and the needle advanced for ½ inch. The sub-arachnoid space extends down to the 2nd spine, and is liable to be entered if the needle is entered too deeply. 40 c.c. of the solution is injected over a 2-minute period. The indications for sacral block are operations on the perineum and the second stage of labour. Operations on the scrotum may require infiltration of the ilio-inguinal nerve at the superficial inguinal ring.

Dorsal nerve block. The patient lies supine. A moist gauze swab is wrapped around the penis, which is held slightly on the stretch with one hand, between the thighs. The landmark is the symphysis pubis, and 1 inch distal to this, a wheal is raised in the dorsal mid-line of the penis. A 1-inch needle is inserted towards the symphysis at 30° to the horizontal until a 'plop' is felt as it pierces the suspensory ligament, beneath which lie the two dorsal nerves of the penis. 20 c.c. of the solution is injected.

Hernia block. The line of incision is first infiltrated with 10-15 c.c. of 1% solution. Then a secondary wheal is raised 1 inch above and medial to the landmark, which is the anterior superior iliac spine. Through this a long needle (3-5 inches) is inserted vertically backwards until it is felt to pierce the aponeurosis of the external oblique. Here 30 c.c. of 1% solution is deposited, catching the ilio-hypogastric and ilio-inguinal nerves. The needle is then passed more deeply, care being taken to maintain a steady flow. It pierces the deeper muscles and enters the extraperitoneal fatty plane. It will not pierce the peritoneum unless adhesions from a previous operation prevent the peritoneum from being floated away by the fluid. 10 c.c. are injected during this manoeuvre. The needle is then directed towards the edge of the rectus and another 10 c.c. is injected similarly. Once again, the needle is redirected, this time to reach the iliac bone, 10 c.c. being injected during this step. Occasionally 1-2 c.c. must be injected into the spermatic cord as it emerges from the deep inguinal ring to make its mobilization and dissection quite painless.

Digital block. A wheal is raised on the mid-line of the dorsum of the finger opposite the web. The needle is then passed forwards and a wheal is raised in the groove between the bone and pad of the proximal phalanx on each side. The needle is then re-inserted perpendicularly into this groove and 0·25 c.c. injected to catch the palmar digital nerve. A gauze swab is wrapped around the root of the digit and a tourniquet applied at that level. With experience, a 2-c.c. ampoule of 2% novocaine-adrenaline will suffice to complete the block.

Wound block. In a transverse wound on a limb, the central portion of the distal edge is anaesthetic because cutaneous nerve fibres have been divided. A needle is inserted here and a wheal is raised on each side of the wound. Through these wheals, the needle is re-inserted and the proximal edge is infiltrated. If the wound is oblique, the anaesthetic area will be nearer the distal end of the distal edge. In a vertical wound, such an area will probably not exist, and a wheal should be raised proximally and an infiltration made on each side in the shape of an inverted V or U. Except in vertical wounds, if the patient is not permitted to watch the procedure, the injection and subsequent operation can be done without the patient's knowledge. This is very desirable in nervous patients, especially small children.

S.A. SOCIETY OF OBSTETRICIANS AND GYNAECOLOGISTS : OPENING ADDRESS AT CONGRESS*

S. F. OOSTHUIZEN, M.D. (CAPE TOWN) F.R.C.P. (EDIN.), D.M.R., F.F.R., *President, S.A. Medical and Dental Council*

It gives me great pleasure to extend a hearty welcome to the participants of this congress and to express the hope that they will not only find the deliberations fruitful, but that they will also enjoy their brief stay in the administrative capital of this country. I should like to refer particularly to our overseas visitors who have honoured us with their much appreciated presence. Both Professors R. Keller of Edinburgh and R. J. Lowrie of New York are specialists of international repute in the field of obstetrics and gynaecology. They are specially welcome in South Africa because of the strong cultural and political links which have always existed between their countries and ours and because South Africa has always subscribed to the western way of life epitomized by these countries.

The medical profession in South Africa owes great debts of gratitude to Scotland and the USA for the hospitality extended to our medical students since the commencement of our existence as a nation. Edinburgh attracted more medical students from this country than most other university cities, particularly in the days before we had our own medical faculties. More and more South Africans are enjoying the hospitality of American institutions at the postgraduate level. We are grateful to the U.K. and the U.S.A. for all these opportunities of advancement and I wish to make use of this occasion to respectfully ask our illustrious colleagues to convey these sentiments to their professional brethern in their home countries.

This is an appropriate occasion to pay tribute to the speciality of obstetrics and gynaecology for its proud history of uninterrupted service to mankind through the ages. The speciality has revealed a solidarity of purpose unequalled by any other and has remained one of the corner stones of medical science since the beginning of medical history. Where fragmentation and super-specialization have often threatened the existence of other branches of medicine obstetrics and gynaecology has presented an impenetrable front which has successfully repulsed all attacks and has survived all the storms in medical history. It survived the difficult period before antiseptics and before anaesthesia, and it has taken numerous breath-taking discoveries and developments in its stride. It appears to be quite undaunted by the impact of the atomic age with its succession of startling developments.

I have often thought of the words of Ovid that 'it is not wealth nor ancestry but honourable conduct and a noble disposition that make a profession great', and realized how true these words are when applied to this branch of medicine. The speciality has remained important but it has in many respects kept aloof from other sciences. I doubt whether it is fair to wonder what effect the philosophy of Sydney Smith had on this attitude when he

* VII Congress of the South African Society of Obstetricians and Gynaecologists, Pretoria 4-6 August 1958.

said: 'Have the courage to be ignorant of a great number of things in order to avoid the calamity of being ignorant of everything.'

This branch of medicine—obstetrics and gynaecology—has been pregnant with many new ideas in its own field and has made numerous contributions to medical science.

RADIOLOGY

Carcinoma of the cervix, for example, has remained a problem for the speciality, and the controversy on what is the best form of treatment is still raging. Improved technical developments in the field of radiotherapy have enhanced its position as the treatment of choice, but this popularity has in recent times been seriously challenged by operative surgery, particularly because the mortality has been reduced to a negligible degree as the result of developments in the fields of transfusion, antibiotics and anaesthesia. Whatever advantages may be claimed in respect of either method, it remains a fact that no authoritative report on a comparable series of cases is at present available. There can be no question that the one method is a valuable adjunct to the other.

Considerable attention has in recent years been directed towards the relative merits of supervoltage radiotherapy and conventional radiotherapy. The impression has been created that the former method was by far the superior one and presented the complete answer to the problem of the treatment of cervical malignancy. The advantage of supervoltage over conventional therapy is essentially of a physical nature, there being greater penetration, reduced skin damage, a lessened tendency to bone necrosis, and on the whole a greater measure of tolerance on the part of the patient and fewer late complications. It must, however, be stressed that the emphasis should be placed on the properly trained staff, medical as well as paramedical, with available proper facilities and working in a team, rather than on the machine.

The use of interstitial radio-active cobalt needles has given disappointing results mainly because of the distressing complications like proctitis which develop in such a high percentage of cases. Similarly, the value of pelvic exenteration has not been determined because of the high mortality rate. There is some hope that with improvement in technique, a more hopeful outlook in advanced cases may be expected.

The end-of-treatment biopsy method has been advocated in some quarters, but it appears to be an unreliable prognostic guide on the evidence so far available, chiefly because of the failure to obtain a representative section in the deep tissues, which has been a great source of error.

The evaluation of basal cell in radiosensitivity studies has shown that clinical regression of a lesion is more closely related to good basal response than any other finding. The behaviour of basal-cell activity before and during treatment serves as a good index of the resistance of the host, and a progressively increased basal-cell response during treatment is of great prognostic significance.

The endeavour to determine radiosensitivity in cancer of the cervix by studying the growing edge by serial biopsy specimens taken before and during radiation therapy has also received attention in certain quarters, and it has been suggested that cytochemical prognostication might be a valuable guide by indicating the nature of future therapeutic procedures; e.g. continuation of therapy in patients who respond well, supplementary operative removal of lymph glands where there is a fair response, and discontinuation of radiation therapy and substitution of radical therapy where the response is poor.

A study of the influence of systemic factors on differentiation and radiocurability of cancer of the cervix has indicated that it will be useful to investigate the factors which influence the differentiation of malignant tissue rather than to seek agents which inhibit mitosis and control growth temporarily.

Potential Dangers of Radiation

The dangers to man of nuclear and allied radiations have enjoyed a great deal of publicity in the lay and professional press in recent years and statements at present quite unsupported by sufficient scientific data have been made about the extent of the dangers. A marked degree of public awareness and anxiety has resulted and has interfered with essential radiographic investigations and treatments as well as with the training of essential personnel.

There can be no doubt that ionizing radiations (from X-rays, radium, radio-active isotopes) are potentially harmful to the human, particularly because of the genetic changes which may result from exposure of the reproductive organs. It is obviously necessary that X-ray examinations of persons in the reproductive stage and of pregnant women should be reduced to the minimum and that the international standards of radiation safety should be stringently applied. There is, however, reason to believe that the dangers have been grossly exaggerated and that a more realistic approach by the public is desirable in the best interests of all concerned.

In my opinion, a good case can be made out for refraining from conducting pelvic radiographic investigations on pregnant women unless absolutely necessary because of the potential danger to the infant. Similarly radiographic pelvimetry, as a routine method, should be dispensed with. I have an abhorrence for some of those specialized radiographic examinations like placentography and feel that there should be good reasons on medical grounds before we embark on this type of investigation. The use of ionizing radiations in obstetrics and gynaecology cannot be altogether dispensed with, but they should be used with great discretion.

The public should appreciate that the doctors are aware of the potential dangers and that every effort is being made to safeguard the health of the individual.

EDUCATION AND RESEARCH

In the field of medical education the position of the speciality obstetrics and gynaecology remains entrenched both as regards the undergraduate and postgraduate curriculum. Here too I think the teachers of obstetrics and gynaecology have through the ages adhered to a basic and simple philosophy, that 'the great end of education is to dicipline rather than furnish the mind; to train it to the use of its own powers rather than fill it with the accumulation of others'.

Similarly in the compulsory internship scheme, experience in obstetrics and gynaecology is acceptable as partly fulfilling the requirements for full registration.

Medical research in this country is under the aegis of the Council for Scientific and Industrial Research, which is charged by Parliament to sponsor medical research developments. The CSIR is supporting research, mainly at universities, by means of the research grants scheme and by the establishment of research groups and units. It also makes available a number of bursaries for directed research in overseas institutions. The CSIR is administering approximately £¼ million a year on medical research in this country, which of course is very satisfactory, considering the population and financial resources.

There have been established a number of units and groups at universities and other institutions but so far none is in existence in the field of obstetrics and gynaecology. A good deal of money however, has been made available to research workers in this branch in accordance with the provisions of the *ad hoc* and bursary schemes.

In my opinion, a good deal more research can be done by practitioners in this branch. South Africa is a veritable natural laboratory, with abundant material allowing of full exploitation of the concept of geographical pathology and environmental medicine. This Society will render a signal service to the community by sponsoring a policy of such research as an adjunct to the unfettered fundamental research already carried out at universities.

We must strive to get an alliance of interested persons. 'We gain nothing by being with such as ourselves: we encourage each other in mediocrity—I am always longing to be with men more excellent than myself' (Lamb). We must also ask the question whether science can prevent education from becoming a means for giving a fixed direction to stupidity. I think an alliance of interested people can prevent this from happening.

MATERNITY SERVICES

With great respect to the Society, one of the greatest deficiencies exists on the organizational front. It is a well-known fact that preventive medicine, with particular reference to antenatal care is of the greatest importance for the continued growth of this, branch of medicine. It is also known that maternity services are at present generally on an unsatisfactory basis and that there is little, if any, coordination of antenatal care, delivery and treatment of abnormalities. In my opinion, it should be one of the

first priorities of your Society to correct this deficiency in the interests of the speciality as well as the public.

I think I can state without fear of contradiction that the Provincial Administration of the Transvaal and its department of hospital services have through the years displayed great foresight in the planning of progressive medical services. In my opinion the absence of properly coordinated maternity services cannot be blamed on the authorities in this Province. It is more than likely that the divided control between different competent authorities may have slowed down the cooperative effort.

The Society has an urgent task to tackle this problem in an endeavour to provide the sorely needed service. I appreciate that we live in the age of the overworked and the under-educated, in which we are so busy that we have in many ways started to suffer from intellectual rigor mortis. But in a matter like this, it is very important that the Society should embark on a sustained battle for improvement of the services.

INTERCHANGE OF KNOWLEDGE AND PERSONALITIES

It is also my view that the Society should continue to stimulate interchange of persons and knowledge locally and abroad in an attempt to overcome any possible danger of scientific isolation. By this I do not mean that mere attendance at international conferences should be encouraged. Actually, large international conferences suffer from numerous deficiencies. A specialistic congress like this is of greater value and so is the sending overseas of bright people to work in famous clinics and to learn new techniques and apply them locally on return. Science does not recognize international frontiers and we should make full use of the fact in establishing international relationships.

I am happy to say that in South Africa the Medical Dental and Pharmacy Act provides for exemption from registration of eminent medical visitors by the Minister of Health on the recommendation of the Medical Council for specific periods, and this enables universities to invite famous people from overseas to demonstrate their techniques locally. It is also possible for foreign doctors to be registered in this country for a period of 5 years (which can be extended) should they wish to enter the employ of the Government service, universities, research institutions and mission hospitals. Furthermore there is full reciprocity between SA and the UK and restricted reciprocity also exists with Holland. From the practical point of view therefore, South African law permits the registration of numerous categories of medical people from overseas, and this facilitates active international cooperation in a professional sense.

THE CONGRESS

The Seventh Congress of The South African Society of Obstetricians and Gynaecologists, under the presidency of Dr. J. C. Coetzee, of Cape Town, was held in Pretoria on 4, 5 and 6 August 1958. The hosts on this occasion were the Pretoria Sub-group of the Society and the deliberations took place in the clinical building of the Pretoria Hospital.

There were two overseas guests: Prof. Robert J. Kellar, of the Department of Obstetrics and Gynaecology at the University of Edinburgh, addressed the Congress on 'The Endocrine Control of the Menstrual Cycle during Health and Disease'. Prof. Robert J. Lowrie, of the Department of Obstetrics and Gynaecology of the New York University College of Medicine, read a paper on 'The Surgery of the Bartholin Gland with special reference to the new operation of marsupialization'.

The Congress was opened officially on Monday morning, 4 August, by Prof. S. F. Oosthuizen, President of The South African Medical and Dental Council. His address is published above.

STATE OF THE UNION'S HEALTH : MINISTER'S REVIEW

BY OUR PARLIAMENTARY CORRESPONDENT

Making his first official statement of policy since his appointment as Minister of Health, Mr. M. D. C. de Wet Nel dealt in the Senate on 21 August with the incidence of poliomyelitis, diphtheria, enteric fever, leprosy, malaria and tuberculosis in the Union and the steps being taken by the Government to combat these diseases.

He said the number of polio cases last year—up to 30 June 1958—was only 661 as compared with 3,714 the previous year. Leprosy and malaria were also less prevalent and considerable progress had been made in dealing with tuberculosis. But diphtheria cases had reached the new peak of 3,435 cases last year and there had been no fewer than 3,120 cases of enteric fever.

POLIOMYELITIS

Poliomyelitis had reached comparatively serious proportions in South Africa in recent years and in 1956 there had been the unusual and disturbing appearance of the disease even in the winter months.

Unfortunately extremely little was known about how the disease was spread. Consequently it had not yet been possible to devise any special method of restricting the disease. General measures taken to prevent the spreading of the disease included the maintenance of a high standard of hygiene. When there was a general prevalence of the disease it was advisable to prevent children from attending crowded gatherings such as cinema performances and also to avoid physical exhaustion, which might be produced for example by participation in competitive sport.

Apart from these general measures the most effective specific step which could be taken against the disease was the inoculation of the most susceptible sector of the community. South Africa was in the fortunate position of being one of the few countries in the world producing their own vaccine.

It was known that polio tended to follow cycles of incidence with quiet periods intervening. As the Union was experiencing a quiet period at present this seemed the appropriate time to make special efforts to secure the immunization of as many children and young people as possible. The Minister said he had made an appeal through the Press earlier this year for the public to exploit to the fullest extent the measures available in the Union for protection against polio. He asked the Senators to further the propaganda among all the people they came in contact with.

Large quantities of vaccine, which were first approved by an Advisory Committee, were being made available at regular intervals. There was now a sufficient stock of vaccine to extend the age-groups for whom the vaccine had originally been made available. It was being recommended, among other suggestions, that young women should be immunized shortly before or after being married because it had been observed in other parts of the world that if the disease was contracted during pregnancy it sometimes involved special dangers for the expectant mother.

So far 2,122,000 doses of vaccine had been issued. Between April and June this year 751,000 doses had been produced and by April next year 2,500,000 doses would be available in the Union.

As the Director of the Poliomyelitis Research Foundation (Dr. James Gear) was still overseas studying the latest developments the Minister could not give details of recent reports of a new polio vaccine. All that was known at this stage was that the vaccine was being produced from a live virus whereas the present vaccine was produced from a dead virus. He hoped that more information would be available next month after the return of the director of the Foundation.

DIPHTHERIA AND ENTERIC FEVER

The Minister said that both diphtheria and enteric fever could be avoided with relative ease if people would only take the necessary precautionary measures. Unfortunately, however, they neglected to do so and consequently these diseases were widespread every year.

Vaccine against diphtheria was made available free of charge and there should, therefore, be no reason why parents should not use the facilities provided to protect their children.

Personal hygiene and sanitation naturally played the most important role in the prevention of enteric fever. The remedy for the high incidence of this disease was, therefore, to be sought in the improvement of sanitation, especially in the rural districts where most cases of enteric fever were to be found. The Department, assisted by local authorities, could only apply effective

measures to combat this infectious disease with the fullest co-operation of the public. When there were outbreaks of enteric fever vaccine was provided free of charge by the Department.

LEPROSY

The Government's efforts to combat leprosy had met with great success, especially in recent years. Isolation of persons suffering from this disease was still necessary despite the encouraging results achieved since the application of sulphone treatment for the first time in 1947. The disease, however, was fast losing its seriousness as a national health problem, as was evident from the fact that the yearly incidence figure was now only 0·14 per thousand of the population. As a result of the decrease in the disease it had been found possible to close one of the five hospitals originally erected for lepers, while two others had already been converted for the accommodation of tuberculosis patients.

MALARIA

Considerable progress could also be reported in the combating of malaria. Although sporadic outbreaks of the disease were still experienced from time to time, especially after heavy rains in the former malaria areas, the disease was well under control and large tracts of South Africa previously infested with malaria were today virtually free of the disease. There were, however, certain areas where the disease was epidemic, such as the low-lying regions of Zululand between the Lebombo mountains and the Indian Ocean. Malaria was also encountered east of Messina along the Limpopo River and in the Low Veld of the North-eastern and Eastern Transvaal—along the Komati River, for example. The Department's activities in this region were at present aimed at stamping out the remaining sources of malaria infestation through the treatment of parasite carriers with the anti-malaria remedy chloroquine. Besides this the Department was keeping a weather eye open to prevent the recurrence of malaria in areas where it had been virtually eradicated or brought under control.

As it had been observed in other parts of the world that malaria-bearing mosquitoes had developed a resistance to insecticides the Department was continually watching the position in South Africa. So far there had been no signs of this here.

The World Health Organization, of which the Union was a member, was engaged on a campaign to eradicate malaria in regions where the disease was still encountered. Africa was one of the countries where it was still prevalent, but topographical and other factors made it extremely difficult to wipe out the disease. The parts south of the Zambezi offered favourable conditions for the campaign and the organization had decided to hold a conference of representatives of various African States in Lourenço Marques towards the end of this month. In view of the importance of close cooperation between the Union and neighbour States it had been decided to send the Deputy Chief Health Officer, Dr. B. M. Clark, and the Chief Regional Health Officer for the Northern Transvaal region, Dr. C. J. H. Brink, to the conference.

TUBERCULOSIS

Tuberculosis, said the Minister, was still regarded as public-health enemy number one. Through the joint efforts of the Department, local and provincial authorities, mission societies and SANTA, the goal of 15,000 beds set last year had been surpassed and there were now 15,539 beds available for tuberculosis patients. The provision of a further 5,500 was aimed at.

There were no fewer than 159 institutions in the Union which provided wholly or partially for the accommodation of tuberculosis sufferers. The Department itself ran 12 of the biggest institutions, which were erected for the exclusive purpose of treating tuberculosis cases and which had 3,800 beds. The Department subsidized other institutions to a maximum of seven-eighths of the approved building costs of isolation accommodation provided by local and provincial authorities, mission societies and SANTA. The provision of a further 26 institutions was envisaged, of which SANTA alone would provide 18.

Early diagnosis was an important factor in the treatment of tuberculosis. Large-scale radiological services were used to diagnose the disease and to obtain confirmation of suspected cases. There were at present 228 centres with facilities for chest X-rays in the Union, which were supplemented by 19 newly bought mobile X-ray units. With the help of these units more than 166,000 examinations had been completed since their introduction in 1956. Pioneer work was being done in this field and as the service progressed experience was being gained in connection with the type of vehicle and X-ray unit best suited to South African conditions. The policy was to encourage all local authorities serving a population of 20,000 or more to acquire these units with financial assistance from the Government.

Apart from the provision of extra beds, considerable progress had been made in the treatment of out-patients with the cooperation of a large number of local authorities, which were being assisted by the Department to maintain out-patient clinics. There were at present 150 such schemes and 400 sub-clinics in the Union. In addition the Department made arrangements with part-time district surgeons to hold regular tuberculosis clinics in their districts, for which they received extra remuneration from the Department.

It had been realized that supplementary feeding was also an important factor in the treatment of needy tuberculosis sufferers. Recently 46 local authorities had made a start with supplementary feeding schemes, which were subsidized by the Department—seven-eighths of the cost of approved items of diet was refunded.

With a view to offering protection against tuberculosis arrangements had been made for the free supply of BCG vaccine to local authorities desirous of starting an inoculation programme.

The future policy of the Department of Health was aimed at the extension of all these services wherever possible until final victory over tuberculosis was achieved.

MISCELLANEOUS

To enable District Surgeons to keep up with new trends and developments the Department had arranged yearly refresher courses in conjunction with the universities which had medical faculties. The State paid travelling and subsistence costs for the courses as well as the university fees.

It was often necessary for the Department in the fulfilment of its manifold duties to call in the help of outside experts and four standing committees had been appointed under the Secretary for Health to advise the Minister on specific affairs. They were: the Committee on Virology, the Committee on Blood-Transfusion Services, the Committee on Therapeutic Agents, and the Committee on Dental Health Services.

AKADEMIESE STAFDAG VAN DIE KARL BREMER-HOSPITAAL

Die akademiese stafdag van die Karl Bremer-Hospitaal, Bellville, Kaap, sal op Vrydag 5 September gehou word. Die volgende is 'n voorlopige program:

LESINGS

9.00 vm. Opening: Prof. J. N. de Villiers.
9.05 vm. Die Alfa en Beta selle van die eilandjies van Langerhans: Mnr. A. C. Esterhuizen.
9.30 vm. Subtalare stut artrodese: Dr. G. Dall.
9.55 vm. Televisering van uitstallings.
10.25 vm. Verversings.
10.55 vm. Die Tokodinamometer in verloskunde: Dr. P. F. M. du Toit.
11.20 vm. Subarachnoïede bloedings: Prof. A. J. Brink.
11.55 vm. Film: Tegniek van binneaarse infusies: Dr. J. J. W. van Zyl.
12.25 nm. Middagete.
2.00 nm. Die ontwikkeling van die regopstand van die mens: Dr. M. J. Toerien.
2.25 nm. Sekelselanemie: Dr. H. P. Wassermann.
2.50 nm. Behcet se sindroom: Dr. P. V. Suckling.
3.10 nm. Die eksperimentele opwekking van silikotiese fibrose deur radioaktiewe mynstofmonsters: Mnr. B. F. Thiart.
3.35 nm. Verversings.
4.05 nm. Tibiale verlenging vir beenverkorting: Dr. André Roux.

4.30 nm. Kongenitale polikisteuse niere: Dr. J. C. de Villiers.

UITSTALLINGS

I. *Wetenskaplik*

Kunsnier, met besonderhede van die resultate daarmee bereik: Dr. P. W. A. Botha, Dr. J. N. de Klerk, Dr. T. Arndt en Prof. A. J. Brink.

Tokodinamometer: Dr. P. F. M. du Toit.

Patologiese monsters en algemene patologie van verspreide argentaffinoma: Dr. J. J. W. van Zyl en Dr. J. Stockenström.

Naaldbiopsie van die pleura: Fotos van tegniek: Dr. H. P. Wassermann.

Perspective of cardiac oedema: Prof. A. J. Brink, Dr. G. W. Friedland en Dr. J. Stockenström.

X-straal fotos van bal-en-potjie enkelgewrig, en gedeeltelike femorale-kop frakture met avaskulêre nekrose: Dr. Hamilton Bell.

II. *Farmaseuties en Instrumente*

THE VALUE OF AMYL NITRITE IN THE DIFFERENTIATION OF FALLOT'S TETRALOGY FROM PULMONARY STENOSIS WITH INTACT VENTRICULAR SEPTUM*

L. VOGELPOEL, V. SCHRIRE, M. NELLEN AND A. SWANEPOEL

The effect of amyl nitrite on the systemic and right ventricular pressures and the systolic murmur was studied and a strikingly different response was found in the two conditions. In pulmonary or infundibular stenosis with intact ventricular septum, amyl nitrite inhalation induced a marked fall in the systemic pressure and a marked rise in the right ventricular pressure during the first 30 seconds. The systolic murmur during this phase became louder and its duration either remained unchanged or became prolonged. The basal state was reached about 4 minutes after the inhalation. In the tetralogy, amyl nitrite induced a fall in the systemic pressure as well as a fall in the right ventricular systolic pressure. The fall in the right ventricular pressure diminished the pressure gradient across the stenosis, causing a fall in pulmonary flow and pressure. This was reflected in the systolic murmur, which became much diminished in intensity and length. The increased right-to-left shunt was shown by a transient increase in the central cyanosis. After 3 minutes the pressures and murmur had usually returned to the original state.

These findings have been of the greatest value in differentiating mild tetralogy (often acyanotic at rest) from moderately severe pulmonary or infundibular stenosis with intact ventricular septum. The clinical, electrocardiographic and fluoroscopic findings may be indistinguishable and both may have identical right ventricular and systemic systolic pressures. However, the different response to amyl nitrite inhalation of the pressures and the systolic murmur respectively either in the laboratory or clinic affords a simple harmless method of considerable diagnostic value.

* Abstract of paper presented at Research Forum, University of Cape Town, on 13 August 1958.

OFFICIAL ANNOUNCEMENT : AMPTELIKE AANKONDIGING

TARIFF OF FEES FOR APPROVED MEDICAL AID SOCIETIES

The following amendments to the Tariff have been approved by the Executive Committee of Federal Council and come into operation as from 1 September 1958:

Fees for General Practitioners

1. Johannesburg Municipal Area only:

(*b*) Visits to residence, nursing homes and hospitals £1 0s. 0d.

2. Rest of Union and South West Africa:

(*b*) Visits to residence, nursing homes and hospitals (having regard to the fees for private patients in the area) 15s. to 17s. 6d.

3. Subsequent visits at nursing homes and hospitals to be the usual fee per visit or 5 times the appropriate fee per week, whichever is the less.

4. (*a*) Night Visits: The fee shall be £1 7s. 6d. for Johannesburg and £1 5s. 0d. for the rest of the Union and South West Africa.

(*b*) Weekend visits: In the case of an initial call received and made during a weekend (1 p.m. Saturday through Sunday) or a Public Holiday the General Practitioner may in his discretion charge a visiting fee of up to 25s., it being recognized that the medical aid society may pass the additional fee to the member. For the purpose of this paragraph an initial call means one for a patient who has not been seen during the preceding six days.

It must be emphasized that when the fee for weekend visits was under discussion with the representatives of medical aid societies the view of the societies was opposed to a weekend fee because it would mean that patients would be penalized for illnesses contracted during that time. The societies only agreed to the weekend fee after the members of the Central Committee for Contract Practice had assured them that cases of genuine illness would always receive consideration and members of the Association are requested to view this concession by the medical aid societies in that light.

L. M. Marchand
Associate Secretary

Medical House
Cape Town
25 August 1958

TARIEF VIR GOEDGEKEURDE MEDIESE HULPVERENIGINGS

Die volgende wysigings in die Tarief is deur die Uitvoerende Komitee van die Federale Raad goedgekeur en is van toepassing met ingang 1 September 1958.

Gelde vir Algemene Praktisyns

1. Johannesburg Munisipale gebied alleen:

(*b*) Besoeke aan woning, verpleeginrigtings en hospitale £1 0s. 0d.

2. Res van Unie en Suidwes-Afrika:

(*b*) Besoeke aan woning, verpleeginrigtings en hospitale (met inagneming van die gelde vir private pasiënte in die gebied) 15s. tot 17s. 6d.

3. Vir daaropvolgende besoeke by verpleeginrigtings en hospitale word die bedrag vir 'n gewone besoek gevra of 5 maal die bedrag in die betrokke gebied per week wat ook al die mindere is.

4. (*a*) Nagbesoeke: Die gelde sal wees £1 7s. 6d. in Johannesburg en £1 5s. 0d. in die res van die Unie en Suidwes-Afrika.

(*b*) Naweek-besoeke: In die geval waar 'n eerste oproep in die naweek (van 1 nm. Saterdag af deur Sondag) of op 'n openbare vakansiedag ontvang en 'n besoek afgelê word kan die algemene praktisyn na sy goeddunke 'n bedrag van tot 25s. vra, maar dit word erken dat die mediese hulpvereniging die addisionele bedrag na die lid kan oordra. Vir die doel van hierdie paragraaf beteken 'n eerste oproep een in verband met 'n pasiënt wat gedurende die vorige ses dae nie gesien was nie.

Dit moet beklemtoon word dat toe die gelde vir naweekbesoeke onder bespreking met die verteenwoordigers van mediese hulpverenigings was, die verenigings teen sodanige gelde gekant was omdat na hulle mening dit sou beteken dat pasiënte vir siektes wat deur die naweek opgedoen is beboet sou word. Die verenigings het alleen tot naweekgelde toegestem nadat die lede van die Sentrale Komitee in verband met Kontrakpraktyk hulle verseker het dat gevalle van werklike siekte altyd in ag geneem sou word. Lede van die Vereniging word dus versoek om die toegewing van die verenigings uit hierdie oogpunt te beskou.

L. M. Marchand
Medesekretaris

Mediese Huis
Kaapstad
25 Augustus 1958

OBITUARY, DR. EDWARD HOLFORD WALKER

We regret to announce the death on 9 August 1958 of Dr. E. H. Walker, of 114 Park Drive, Port Elizabeth. His death took place suddenly while he was engaged in fishing and was in the act of casting a throw-net in the shallows along the Zwartkops River. Dr. Walker lived as a boy in Port Elizabeth, and was educated at Grey High School, Port Elizabeth, Rhodes University, Grahamstown, and the University of Cape Town, where he qualified in medicine in 1927. He practised for some years as an ophthalmologist at Pretoria, then as a general practitioner at Umtata, and in recent years he again practised the speciality of ophthalmology at Port Elizabeth. During the war he served with the Medical Corps. He leaves a widow and son. An in memorium notice will be published in a later issue of this *Journal*.

PASSING EVENTS : IN DIE VERBYGAAN

Dr. Victor Berman, Senior Radiologist at the General Hospital, Johannesburg, and Radiologist in charge of the Children's Hospital, left by air on 22 August for a 5 months' visit to Europe and Israel. He will spend 3 months in London, where he will do postgraduate work at several London hospitals. Dr. Berman is accompanied by his wife.

* * *

Research Forum, University of Cape Town. A meeting will be held on Wednesday 3 September 1958 at 12 noon in the large A-floor lecture theatre, Groote Schuur Hospital, Cape Town. Subject: 'A comparative study of the histological incidence of liver siderosis in 3 racial groups in Cape Town'. Speakers: Drs. C. J. Uys, J. J. van der Walt, G. M. Potgieter and H. H. Golby.

* * *

The South African Paediatric Association. The next meeting of the Cape Town Sub-group of this Association will be held on Tuesday 2 September 1958 in the Lecture Theatre, Red Cross War Memorial Children's Hospital, Rondebosch, Cape, at 8.15 p.m. Dr. M. Glass will speak on 'The Nature, Character, Behaviour and Significance of Fluid Levels without Paranasal Sinuses'.

* * *

Combating Illicit Trafficking in Opium. An international research programme is in operation which aims at determining the country of origin of opium seized by police of different countries. The programme is a joint undertaking of the United Nations and scientists from opium-producing countries. Much of the research work on samples is carried out in the United Nations Research Laboratory in Geneva.—*Unesco.*

* * *

Red Cross War Memorial Children's Hospital, Rondebosch, Cape. The next meeting in the Postgraduate Seminar Series of lectures under the auspices of the University of Cape Town Department of Child Health will be held in the lecture theatre of this hospital on Wednesday 3 September at 5 p.m. Dr. P. Lanzkowsky will speak on 'Iron Deficiency Anaemia in Cape Coloured and African Children in Cape Town'. All medical practitioners are welcome.

* * *

Dr. J. G. Louw, of Cape Town, who is in London at present, has been working at the Institute of Ophthalmology and associated hospitals. He has been especially interested in advances made in corneal grafting and in the methods of education of partially-sighted children in special schools. Dr. Louw attended the Oxford Ophthalmological Congress and he hopes to attend the International Congress of Ophthalmology in Brussels. He expects to be back in Cape Town in October.

* * *

Mr. C. J. Kaplan, M.Ch.Orth., F.R.C.S. of Durban has been awarded a Hunterian Professorship in the Royal College of Surgeons of England. He leaves for Europe on 1 September and will attend The International Congress on Tropical Diseases in Lisbon on his way to London. In Lisbon he will deliver a paper on 'The Treatment of Skeletal Tuberculosis in the Tropics'. The subject for his Hunterian lecture is 'An Appraisal of Conservative Therapy in Skeletal Tuberculosis'.

* * *

Cape Western Branch: Alan Sichel Golf Trophy. A Stableford bogey competition will be held at the Mowbray Golf Club on Wednesday 17 September. Entries should be sent to Dr. J. L. van Selm, Southern Life Buildings, 101 St. Georges Street, Cape Town (telephone 2-1779); or Dr. Jack Gelb, Commercial Union Buildings, St. George's Street, Cape Town (2-8122); or Dr. Ryno Milner, Southern Life Building, 101 St. George's Street, Cape Town (2-1938). As a large turn-out is expected entries should be sent in as soon as possible.

* * *

Rapid Increase in World Population. Prof. K. Davis, United States representative on the United Nations Population Commission, states that there are signs that the world's population will double within another 40 years. If the population growth continues at the present rate there will be nearly 6 thousand million by the end of this century and nearly 13 thousand million by the year 2050. The present increase has been described by Julian Huxley* as an explosive process and is without example in history. Professor Davis adds: 'This explosive human multiplication cannot continue indefinitely. How this growth is eventually stopped, and when, will play a tremendous role in human destiny'. *University of California.*

* Huxley, J. (1957): *New Bottles for New Wine*, p. 174. London: Chatto and Windus.

* * *

Nuclear Energy and Human Health. At the XII General Assembly of the World Medical Association (August 1958) a campaign was started to keep the medical profession of all countries fully informed on the effects of nuclear radiation. Medical and industrial progress necessitates continued nuclear experimentation in order to make nuclear energy useful to mankind, and there is a general belief among the peoples of the world—not necessarily supported by facts—that this endangers human health. Certain national medical associations, have urged in the WMA that their members should be provided with factual information on nuclear radiation, so that they may inform the people of the true facts on nuclear experimentation. The medical associations in countries where such information is available will be invited to provide the WMA with literature on the latest developments in this field and this literature will be sent to all member national associations for distribution to medical practitioners. It is expected that the literature exchange programme will be initiated before the end of 1958.

* * *

The London Medical Exhibition 1958, the 42nd since that first held in 1905, will take place in the Royal Horticultural Hall, Westminster, on 10-14 November. It will be officially opened on Monday 10 November by Sir Roy Cameron, K.B., F.R.C.P., F.R.S., Professor of Morbid Anatomy, University College Hospital Medical School, London. Admission is extended to doctors, surgeons, pharmacists and senior hospital officers and technicians, as well as purchasing agents, etc. Visitors from overseas may obtain invitations on application (194-200 Bishopsgate, London, E.C. 2). Amongst the exhibits to be shown are: Drugs and medical specialities; surgical instruments and apparatus; electro-medical equipment and medical apparatus; anaesthesia apparatus and oxygen therapy equipment; surgical dressings; optical instruments and apparatus; orthopaedic appliances; hearing aids; hospital equipment and furniture; medical and technical publications; scientific and laboratory apparatus, etc. Technical medical films will be shown each day, and a collection of medical prints by great artists of the past will be on view.

* * *

Tuberculosis Campaigns in Africa. The World Health Organization is putting several tuberculosis survey teams at the disposal of governments in Africa. The method used is based on random sampling according to the criteria established by the WHO tuberculosis Research Office, Copenhagen, Denmark. A WHO survey

team generally consists of a tuberculosis M.O., a statistician (in charge of the sampling method), an X-ray technician, a laboratory technician and one or two tuberculosis nurses. The examination of the population comprises tuberculin testing, bacteriological sputum examinations and, where the equipment permits, X-ray examination.

In 1957-58 surveys have been carried out in Ghana (Accra, Kumasi and elsewhere—4,200 persons selected for examination), Nigeria (Lagos and Ibadan—1,600), and Sierra Leone (Freetown—1,500, plus groups of schoolchildren).

The largest survey will be in Nairobi, Kenya, where the whole African population of the town (about 130,000) is to be examined within 2 years and those affected with pulmonary tuberculosis treated immediately. This year a tenth of the total population (i.e. about 12,000 people) will be examined for an early assessment of the incidence of pulmonary tuberculosis. Mass surveys will start next year. For this project the Government of Kenya appointed 2 tuberculosis M.Os., a public-health nurse and 35 auxiliaries headed by a supervisor; WHO sent 2 medical officers, a laboratory technician, a bacteriologist and a public-health nurse: and UNICEF allocated 147,000 dollars for X-ray sets, laboratory material, transport and drugs during the 3 years' period of the survey.

Similar surveys are being carried out by WHO teams in Uganda and Mauritius, and plans are made to send similar teams to Nigeria, Basutoland and Bechuanaland in the near future.

* * *

Union of South Africa, Department of Health. Newsletter No. 33 of 1958. Notification of formidable epidemic diseases and poliomyelitis in the Union during the period 8-14 August.

Plague and Smallpox. Nil.

Typhus Fever: Cape Province. 6 (Six) Native cases from Qoqodala location, Glen Grey district, confirmed by laboratory tests. 1 (One) Native case in Upper Telle location, Herschel district.

	Poliomyelitis				
	Eur.	*Nat.*	*Col.*	*As.*	*Total*
Transvaal	–	4	1	–	5
Cape Province ..	–	–	1	–	1
Orange Free State	1	1	–	–	2
Natal	–	–	–	–	–
Totals	1	5	2	–	8

Correction:

Orange Free State: 1 (One) Native case reported in Newsletter No. 27 of 1958 now diagnosed as 'not poliomyelitis'.

Local Authorities	*Eur.*	*Non-Eur.*
Transvaal:		
Hendrina district .. .. .. R		1
Lydenburg district .. .. R		1
Peri-urban areas Health Board (Johannesburg) .. .. .. R		1
Peri-urban areas Health Board (Nigel) .. .. U		1
Potchefstroom municipality .. U		1
Cape Province:		
Porterville municipality .. .. U		1
Orange Free State:		
Koffiefontein district .. .. R		1
Paul Roux district.. .. .. R	1	

Correction:

Orange Free State: 1 (One) non-European case in Odendaalsrus, reflect in annexure to Newsletter No. 27 of 1958, now diagnosed as 'not poliomyelitis'.

R = Rural. U = Urban.

NEW PREPARATIONS AND APPLIANCES : NUWE PREPARATE EN TOESTELLE

'STEMETIL' IN PSYCHOTIC ILLNESSES

Maybaker (S.A.) (Pty.) Ltd., in announcing the introduction of two new presentations of 'Stemetil' brand prochlorperazine for use in psychotic illnesses, supply the following information. These are tablets of 25 mg. of the dimaleate and 2 c.c. ampoules of 1·25% w/v solution of the methanesulphonate. The other presentations of the drug are tablets of 5 mg. of the dimaleate, suppositories containing 25 mg. of the dimaleate, and ampoules of 1 c.c. of a 1·25% solution of the methanesulphonate.

Clinical trials of prochlorperazine in psychoses have been in progress in mental hospitals in various parts of the world for more than 2 years. Evidence from these widespread studies, some of which are still in progress, has indicated that prochlorperazine is a valuable addition to the drugs already available for the management of psychotic illnesses.

The primary indication for 'Stemetil' is in the management of schizophrenia. In many cases 'Stemetil' may make withdrawn, autistic, catatonic cases amenable to psychotherapy at a relatively early stage in treatment. It may be employed successfully in the management of excitement, whether associated with schizophrenia, the manic-depressive psychosis, or other psychiatric conditions in which agitation and excitement are notable features. Although the drug has been used on a very large number of patients, no case of jaundice or blood dyscrasia attributable to its use has been reported.

CORRESPONDENCE : BRIEWERUBRIEK

RELAXANT DRUGS AND CONSCIOUSNESS

To the Editor: In a recent article published in another medical journal[1] the author, Dr. Eric Lurie, coins a phrase 'paralytic vivisection'. A Sunday paper made full use of this article, introducing it with banner headlines on the front page.

There is no doubt that practically every trained anaesthetist will have much to quarrel about with Dr. Lurie.

Firstly he states that 'numerous cases of this (patient completely paralysed, but awake) have occurred in this country in nursing homes and hospitals. Many surgeons can vouch for their authenticity'. Who are these surgeons and where and when did these cases occur? Unsupported statements cannot be accepted in medical literature.

Secondly he says that 'should a patient gag, move or commence spontaneous respiration, he is immediately given another dose of relaxant'. Surely Dr. Lurie does not really believe that any anaesthetist worth his salt would conduct an anaesthetic in this way. Why, even the basic text-books state that movements, particularly, are an indication for more analgesic and narcotic agent.[2,3] Furthermore Gray[3] (a pioneer of the relaxant technique in Britain) states: 'The danger of a patient waking during operation is extremely remote, for reflex responses are apparent long before consciousness and awareness return. The dose of relaxant agent, even if apnoea is present, should never be sufficient to prevent reflex muscle movement.'

Lastly Dr. Lurie appears to condemn controlled respiration, but is this not infinitely preferable to the under-ventilation, with its concomitant hypoxia and retention of carbon dioxide, which may follow most anaesthetic agents, and almost invariably results from the relaxant drugs, even in small doses. Besides, controlled respiration can be practised (if correctly done) during the performance of even the longest operations with little apparent effect on the patient.

May I suggest Sir, that, far from the 'paralytic vivisection

technique' spoiling the good name of anaesthetics, the reporting of a medical article, the accuracy of which is open to considerable doubt, in the Sunday press is far more likely to have this effect.

J. T. Russell

Elizabeth House
84 Park Drive
East London
11 August, 1958

1. Lurie, E. (1958): Med. Proc., **4**, 513.
2. Lee, J. A. (1953): *A Synopsis of Anaethesia*, 3rd ed., p. 343. Bristol: John Wright & Sons. London: Simpson Marshall.
3. Evans, F. T. (1954): *Modern Practice in Anaesthesia*, 2nd ed., p. 235. London: Butterworth.

REACTION TO AN ANTIHISTAMINIC

To the Editor: I wish to report on a reaction to Histryl Spansule, a new preparation for hay-fever. I am a chronic sufferer and have tried every available antihistamine preparation, but so far have never experienced so severe a soporific effect.

I took one 5 mg. Histryl Spansule at 8 a.m. yesterday, with breakfast. There was no apparent effect all morning, my hay-fever being as troublesome as usual. By about 1 p.m., however, there was complete alleviation of the rhinorrhoea. At 2.30 p.m. I suddenly noticed a heaviness of arms and legs and found difficulty in keeping my eyes open. There developed a dull ache in the small of my back, which radiated into both hypochondriac regions. It was this pain that prevented me from falling asleep. This continued till 6.30 p.m., when it began to subside, and I felt normal again by 7 p.m.

P. Gersholowitz

85 St. George's Street, Cape Town
20 August 1958

WYLE J. S. DU TOIT

Aan die Redakteur: Deur die welwillendheid van die *Mediese Tydskrif* dra ek graag my erkentlike dank oor aan almal wat ter nagedagtenis van my eggenoot bygedra het tot die Liefdadigheidsfonds van die Mediese Vereniging.

Diegene wat hom geken het, sal begryp wat so 'n gebaar van sy kollegas en vriende vir hom sou beteken het.

Namens hom dank ek hulle.

Emmie Steyn du Toit

'Vreugde'
Rugbyweg, Oranjezicht
19 Augustus 1958

THE LATE DR. J. S. DU TOIT

To the Editor: May I through the courtesy of your *Journal* convey my heartfelt thanks to all who, in memory of my husband, contributed to the Benevolent Fund of the Medical Association.

Those who knew him will realize what these gestures on the part of his colleagues and friends would have meant to him.

In his name I thank them.

Emmie Steyn du Toit

'Vreugde'
Rugby Road, Oranjezicht
19 August 1958

AFRIKAANS AS MEDIESE VAKTAAL

Aan die Redakteur: Na aanleiding van die onlangse redaksionele uitnodiging[1] daartoe wil ek my ook graag uitpraat oor ons jongste mediese vakterme in Afrikaans. As vurige patriot sou ek beslis niks wou doen wat die ontwikkeling van ons Afrikaanse vakterminologie kon strem nie, en dis juis daarom dat ek nou te velde trek teen die ‚amptelik erkende' skryfwyse.

Waarom word ‚cyste' nou vermink tot ‚kiste' en ‚baarmoeder*shals*' tot ‚baarmoeder*nek*'? As ons 'n bietjie aandag wou gee aan die pragtige mediese vakterminologie van die Nederlanders en die Duitsers (of liewer Duitssprekendes), sal ons vir onsself terme kan vind wat, afgesien van hulle letterlike juistheid, boonop mooi klink, en sal ons nie verval tot sulke platvloersighede soos baarmoedernekke en ander onvermeldbaar-ergere voorbeelde nie.

Verder sal dit ons behoed van die verspotte verafrikaansing van Griekse of Latynse woorde. Om bv. ‚cyste' te verander na ‚kiste' is tot absoluut geen voordeel nie. Die spelling hou geen verband met die etimologie nie, en foneties is dit ook nie reg nie, want dan sou ons ‚kieste' moes skryf. Dieselfde geld vir servicks, of serwiks . . . of . . . is dit nou serwieks?

Verder is dit duidelik dat die anglisisme ook sy invloed laat geld het—hoe anders sou 'n mens kon verklaar dat ‚hidrofiel', byvoorbeeld, nou hidrofilies word?

In die stamtale van Afrikaans vind ons 'n behoorlike verskil tussen die vaktegniese en leketaal op ons gebied. So heet ‚placenta' in die volksmond ‚nageboorte', ‚perineum' heet ‚bekkenbodem' en ‚hernia' heet ‚breuk'.

Daar bestaan dus hoegenaamd geen aanleiding tot die aaklige plat skryfwyse wat ons nou as ‚korrek' voorgehou word nie en gevolglik hoop ek dat baie min geneeshere hulle van hierdie barbaarshede sal bedien. Baie dankie. ‚Ik heb gezegd.'

S. J. Eloff

Baragwanath-Hospitaal
Johannesburg
2 Augustus 1958

1. Van die Redaksie (1958): S. Afr. T. Geneesk. **32**, 675.

OPLEIDING VAN ALGEMENE PRAKTISYNS

Aan die Redakteur: Met verwysing na u inleidingsartikel[1] en die onlangse skrywe in die *S.A. Tydskrif vir Geneeskunde* deur die Tak Wes-Kaapland, in verband met die Algemene Praktisynskollege, wil ons graag vir u meedeel wat die O.V.S. en B. Tak van die Mediese Vereniging in hierdie verband reeds gedoen het, en vir die toekoms beoog.

'n Geruime tyd is hier in Bloemfontein 'n klein studiekring besig met besprekings van kliniese gevalle, asook 'n joernaalklub waar lede 'n kans gekry het om artikels uit verskillende publikasies te bespreek. Verlede jaar het die Vereniging 'n beplanningskomitee in die lewe geroep om die saak van nagraadse studie te ondersoek met die spesifieke doel om 'n nagraadse mediese skool in Bloemfontein te stig en wel onder die vleuel van die plaaslike Universiteit.

Sonder om u met die besonderhede van hierdie komitee se aktiwiteite te bemoei, wil ek u net graag meedeel dat hierdie komitee reeds die goedgesindheid van al die betrokke outoriteite verkry het. In samewerking met benoemde lede van die Universiteit van die O.V.S., is die komitee besig om 'n memorandum oor die nagraadse opleiding aan die Universiteit op te stel.

Die doelstellinge wat hierdie komitee voorstel is:

1. Om hier in Bloemfontein 'n nagraadse mediese skool te stig wat voorsiening maak vir opknappingskursusse van kort of lang termyne vir algemene praktisyns.
2. Mediese navorsing.
3. Fasiliteite vir die opleiding en kwalifisering van medici wat op die spesialisregister wil kom.

Die komitee het ook daad by die woord gevoeg en het reeds 3 suksesvolle opknappingskursusse hier gereël. Die plaaslike spesialiste het geen moeite gespaar om hierdie kursusse prakties en leersaam te maak nie. Ons verwys u na die verslag in die *S.A. Tydskrif vir Geneeskunde* van 10 Mei 1958 onder die rubriek ‚In die verbygaan' asook die brief van waardering van sekere kollegas wat een van hierdie kursusse bygewoon het, soos gepubliseer in die *S.A. Tydskrif vir Geneeskunde* van 31 Mei 1958.

Hierdie tak het reeds weer die Algemene Praktisynsgroep in die lewe geroep en hulle het hulle volle steun aan die Nasionale Algemene Praktisynsgroep gegee vir die stigting van 'n Kollege vir Algemene Praktisyns. Bloemfontein vra die hele Mediese Vereniging se ondersteuning om hierdie sentraalgeleë inrigting 'n waardige instituut te maak wat sy doelstellinge kan volbring en sodoende 'n aanvullende bydrae tot die reeds gestigte mediese skole van S.A. te lewer. Omdat ons hier in besonder oor opleiding van algemene praktisyns skrywe, vra ons die Nasionale Algemene Praktisynsgroep se ondersteuning om hier 'n sentrale inrigting tot stand te bring wat in die behoeftes sal voorsien en die peil van die mediese praktyke sal ophef. Ons het reeds 'n brief in dié verband aan die Sekretaris van Nasionale Algemene Praktisynsgroep, gerig.

Beck de Villiers
Voorsitter O.V.S. en B. Tak
J. W. van der Riet
Ere-Sekretaris Nagraadse Skoolbeplanningskomitee
Die Mediese Vereniging van Suid-Afrika
Posbus 834
Bloemfontein
12 Augustus 1958

1. Van die Redaksie (1958): S. Afr. T. Geneesk., **32**, 799.